UNIVERSITY OF ALBERTA

A WEB SITE:
A TOOL FOR ENHANCING COMMUNICATION
IN
FIELD EXPERIENCE PROGRAMS

BY

RANDALL DEAN LYSENG

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of MASTER OF EDUCATION.

DEPARTMENT OF EDUCATIONAL POLICY STUDIES

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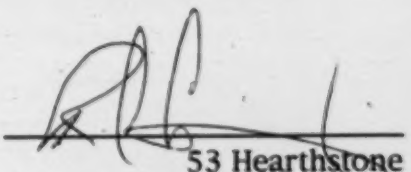

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Abstract

The purpose of this study was to examine whether the consistency, accessibility and timeliness of information communicated between the Division of Field Experiences at the University of Alberta and the participants involved in Field Experience programs can be facilitated through the development of a Web site. The research questions were: (a) Can a Web site provide timely information to participants in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are necessary in order to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants provide in relation to the Web site prototype?

Particular emphasis was given to performing a needs assessment with Field Experience participants, developing a Web site for the Collaborative Schools Initiative and determining whether or not the site met its purpose of providing information and facilitating communication to stakeholders in the project. It was found that the Web site met its intended purpose. Many factors influenced its usability: (a) the technological experience of the user, (b) the technological environment of the user and (c) the design of the Web site. Participants also emphasized the importance of personal contact between University and school personnel.

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled A WEB SITE: A TOOL FOR ENHANCING COMMUNICATION IN FIELD EXPERIENCE PROGRAMS submitted by RANDALL DEAN LYSENG in partial fulfilment of the requirements for the degree of MASTER OF EDUCATION IN EDUCATIONAL ADMINISTRATION AND LEADERSHIP.

Dr. T. Craig Montgomerie

Dr. William G. Maynes

Dr. David J. Sande

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Chapter I: Introduction

Problem

In any successful organization there is a need for structures, standards and roles (Robbins, 1990; Hoy & Miskel, 1996). This is especially true in a University where there is a large turnover of both staff and students. In this "loosely-coupled" (Weick, 1976; Aldrich, 1979; Fuller, 1996) or transient environment, the institution's structure, standards and roles must be divided in an expedient way.

The Division of Field Experiences at the University of Alberta is an example of a loosely-coupled educational organization. Although the Division is comprised of mostly permanent staff, it is the constant turnover of Field Experience participants that creates the problem of communicating structure and standards (Figure 1). These Field Experience participants include (a) Faculty of Education staff, (b) Faculty of Education students, (c) staff and students at University-affiliated institutions and (d) staff at elementary and secondary schools in the geographical area.

Faculty of Education Staff

Faculty personnel change continually, especially those people who work in Field Experience programs. Such people include: (a) professors from the Faculty of Education, some of whom are also designated part-time roles in the Division of Field Experiences and (b) facilitators and instructors who are employed by the University on either a full-time or a part-time (sessional) basis. While the former group consists of full-time professors, the latter group of people is made up of a variety of educators from diverse backgrounds, professors, former teachers and principals, as well as full-time graduate students.

Faculty of Education Students

Once a year there is a massive turnover of students in Field Experience programs. Typically, students are involved in one of the three stages of teacher training provided at the University of Alberta: the EDFX 200 program, the Introductory Professional Term (IPT) and the Advanced Professional Term (APT). The stages are progressive. As students complete a stage and advance to a higher stage of Field Experience, they are presented with different roles and more responsibilities. Therefore, it becomes essential for students to be aware of expectations at each stage.

Students and Staff from Affiliated Colleges

In addition to placing University of Alberta students into schools, staff members from the Division of Field Experiences are also responsible for the in school placements of students who are enrolled at other institutions. Some of these institutions include King's College, the North American Baptist College, Concordia College and Grant MacEwan College. Staff in the Division of Field Experiences is responsible for maintaining contact with key personnel from each of these institutions, who in turn communicate this information to their own staff and students.

School Personnel

In any given year, there are many administrators, school coordinators and cooperating teachers who change positions and schools. As schools are the place in which students' Field Experiences occur, it is imperative for Division of Field Experiences staff to reestablish links and reeducate staff about changes to programs or staffing. Although it is often a permanent staff member who makes initial contact with the schools at the beginning of the school year, it is the responsibility of University facilitators to inform staff about changes with regards to Field Experience programs. These facilitators are sometimes graduate students or retired teachers who have a temporary contract. It is common to have a new group of facilitators every year.

Overview of Field Experience Participants

The purpose of Figure 1 is twofold: to show the number and variety of people involved in Field Experience programs in an academic year. The majority of Field Experience participants are found outside the inner circle and they are the various people with whom the Division of Field Experiences staff members must communicate on a regular basis. People found in this section are organized according to their respective role in Field Experience programs: (a) students in the Faculty of Education ($n = 3, 360$); (b) staff in the Faculty of Education and affiliated colleges ($n = 276$); (c) students from affiliated colleges ($n = 140$); (d) personnel in Edmonton and surrounding schools ($n = 3,358$) (personal communication, R. Wimmer, Professional Officer, Division of Field Experiences, April 21, 1999). The number of people is further broken down according to their position or place in the study.

In analyzing the data in Figure 1, two interesting findings emerge. First, the number of school and University staff (n = 3, 634) required to support Field Experience programs is almost equal to the number of student teachers (n = 3, 500) in the 1997-98 academic year. Second, there are only 25 Division of Field Experience employees to coordinate the various programs and communicate with the large number of participants (N = 7, 134). These findings clearly illustrate that communication is essential between participants at the school and post-secondary levels. Figure 1 also shows how one small group--the Division of Field Experiences--can connect people from a variety of backgrounds, locations and programs.

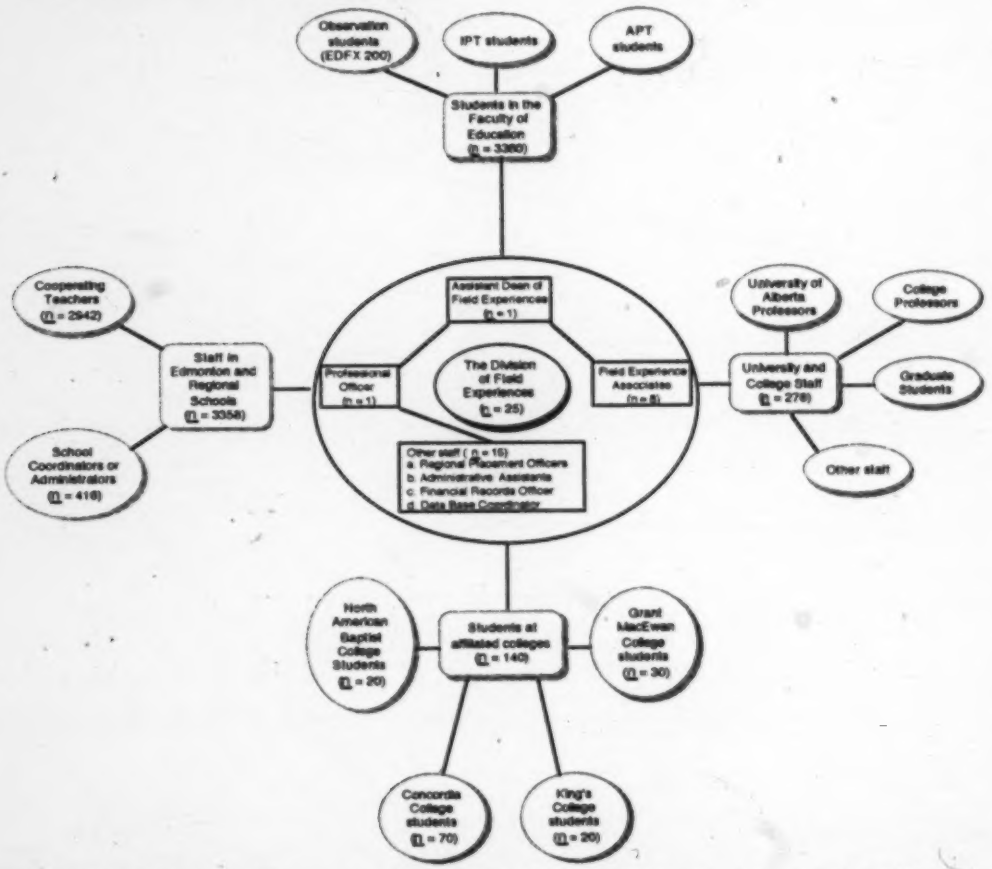
Observation students (EDFX 200)
IPT students
APT students
Students in the Faculty of Education (n = 3380)
Cooperating Teachers (n = 2942)
Staff in Edmonton and Regional Schools (n = 3358)
School Coordinators or Administrators (n = 416)
Assistant Dean of Field Experiences (n = 1)
Professional Officer (n = 1)
The Division of Field Experiences (n = 25)
Field Experience Associates (n = 8)
Other staff (n = 16)
a. Regional Placement Officers
b. Administrative Assistants
c. Financial Records Officer
d. Data Base Coordinator
University of Alberta Professors
College Professors
University and College Staff (n = 278)
Graduate Students
Other staff
North American Baptist College Students (n = 20)
Students at affiliated colleges (n = 140)
Grant MacEwan College students (n = 30)
Concordia College students (n = 70)
King's College students (n = 20)

Figure 1. Relationships between staff in the Division of Field Experiences and participants in affiliated programs and organizations during the 1997-98 academic year (Lyseng, 1999).

The inner circle of Figure 1 represents this small nucleus of people. Employees are broken down according to their role in the Division: (a) administrators, (b) Field Experience Associates and (c) other staff. The leadership role of this organization is directed by two administrators: the Assistant Dean of Field Experiences and the Professional Officer. Both people oversee the day-to-day operations of the Division, however the two positions differ in the type of responsibilities. An Assistant Dean is a professor from the Faculty of Education, who is appointed to the position for a two to three-year term. In the Division of Field Experiences, the Assistant Dean supervises the Professional Officer and the Field Experience Associates. The Professional Officer oversees the administrative assistant, the data base coordinator, as well as staff involved in financial records and regional placements. Typically, the Professional Officer has an administrative background, considerable human resources experience and serves as the link when a new Assistant Dean is appointed. Field Experience Associates are teachers and administrators who are seconded by the University for one to two year terms and provide leadership to various aspects of the Field Experience programs. Division of Field Experience employees work in collaboration to maintain existing Field Experiences programs, as well as develop and implement new Field Experience initiatives. One such initiative that has gained considerable interest since its inception in 1995 is the Collaborative Schools Initiative.

The Collaborative Schools Initiative

In an effort to establish more collaboration between the University and the teaching profession, the Edmonton Area Field Experiences Committee of the Alberta Teachers' Association and the University of Alberta's Faculty of Education established a joint Field Experiences project, entitled the Collaborative Schools Project. Initially, the venture began as a two-year pilot project in September 1995 and involved six schools from the Edmonton area. Two schools from each level of elementary, junior and senior high were represented. September 1996 was witness to the addition of four new schools to the project. This proved beneficial to student teachers, teachers and schools involved. Rather than following the traditional model, whereby student teachers were assigned to one cooperating teacher for their entire Field Experience, student teachers in the project were assigned to the school.

This collaborative model provided them with a meaningful "whole-school" experience, as they were able to participate, observe and teach in a variety of settings. The collaborative model also provided teachers with a leadership opportunity. One or two teachers in each Collaborative School were given the opportunity to assume the role of school coordinator, a position formerly held by a school administrator. Schools who participated in the project had two advantages over other schools. First, they were given priority with regards to student teacher placement. Second, they were also able to access professional development resources from the University.

With such a successful beginning, the project expanded to other schools. In the Spring of 1997, an invitation to become involved in the project was sent to all schools in Edmonton and the surrounding area. Subsequently, in the Fall of 1997, the number of Collaborative Schools increased from 10 to 70. The name of the project was changed from the Collaborative Schools Project to the Collaborative Schools Initiative (CSI) to reflect the growth and progress of the endeavour. As of September 1998, there were 86 schools involved in the Collaborative Schools Initiative, with the majority found within the Edmonton area. This number keeps growing. There are now over 1000 people involved in the Collaborative Schools Initiative (personal communication, R. Wimmer, April 21, 1999).

In September 1998, the results of the Collaborative Schools Initiative Research Project Survey outlined a number of recommendations from coordinators responsible for programs at their schools. Five of these recommendations addressed the challenge of providing ongoing support and improving communication between Field Experience participants. As these recommendations form the basis for this study, I will briefly list those which apply.

Two of the recommendations put forth by school coordinators pertained to their general satisfaction with the project. First, the school coordinators felt that the Division of Field Experiences staff should continue supporting the work of school coordinators. Most coordinators were satisfied with biannual meetings at the University and they were satisfied with the various ways they received information from the Division of Field Experience staff (i.e., mail, phone calls and newsletters). Second, some coordinators wanted to see what

was happening at other Collaborative Schools and, therefore, made a recommendation for Field Experiences staff to establish a network between participating schools. Three other recommendations pertained to how the Division of Field Experience staff could better communicate with the different Field Experience participants. As the traditional Field Experience model differed greatly from the collaborative model, school coordinators felt that University staff needed to better inform student teachers about expectations, objectives and experiences of Collaborative Schools. Furthermore, school coordinators indicated that University facilitators should also be more informed about the collaborative model. Some indicated their dissatisfaction with a number of University facilitators and felt that more attention needed to be made in the selection and training of these people.

A final recommendation from school coordinators reflects a need for improved communication to participants in Field Experience programs. This final recommendation stems from three factors, all of which are related to information management: (a) accessibility, (b) timeliness and (c) consistency.

Accessibility. Information about roles, responsibilities and expectations are communicated, primarily through a series of handbooks that have been developed by Division of Field Experience personnel. However, all participants do not always access these handbooks. Handbooks are available free of charge to University and college staff. It is the responsibility of University facilitators to ensure that school coordinators and administrators each receive a copy. University facilitators are also responsible for providing cooperating teachers with an abridged version of the handbook. Education students are expected to purchase their own handbook at the campus bookstore. Due to the large number of people to whom the information must be disseminated, it is likely that some people never receive a handbook or its abridged version and therefore lack pertinent information about Field Experience programs. Moreover, if people acquire a handbook that is not current, they may not be cognizant of important program updates.

Timeliness. Handbooks provide information that is critical to the success of Field Experience programs. However, due to the number of program changes that occur in Field Experiences every year, they are updated annually. Program additions, deletions or updates are communicated in written form, either through letters or a quarterly publication called the

Collaborative Chronicles.

Consistency. Accessibility and timeliness are precursors to consistency. If people do not have access to the latest version of the Field Experience handbook, it is likely for a miscommunication to occur. Changes that occur on a yearly basis include critical items such as (a) the names and contact information for key Division personnel, (b) important dates during student teaching periods, (c) course number changes and (d) changes to program requirements (i.e., roles, responsibilities, etc.). Inconsistencies in any one of these areas are problematic.

As previously noted, school coordinators provided suggestions on how to improve communication to participants in Field Experience programs. These suggestions support the creation of an organized medium of communication that is flexible and provides timely, accessible and consistent information. An example of such a medium is a Web site.

Purpose

The purpose of this study is to examine whether the consistency, accessibility and timeliness of information communicated between the Division of Field Experiences at the University of Alberta and the participants involved in Field Experience programs can be facilitated through the development and use of a Web site.

Research Questions

With an estimated 7,000 people involved in Field Experience programs associated with the University of Alberta, there is a need for a common medium of communication. Based on this presumption, the questions used to guide this research are focused on how a Web site can provide information and facilitate communication to participants in Field Experience Programs. The research questions are: (a) Can a Web site provide timely information to participants in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are necessary in order to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants provide in relation to the Web site prototype?

Statement of Researcher's Beliefs

Through my experiences as a cooperating teacher, school coordinator and most

recently, as a University facilitator, I have witnessed the problem of miscommunication between participants involved in Field Experience Programs. Although staff from the Division of Field Experiences use several traditional ways to communicate with Field Experience participants (i.e., telephone, letters, handbooks, facsimile, face-to-face), it is my belief that a Web site would enhance these forms of communication. Therefore, I created a prototype of a Web site for a select group of Field Experience participants involved in the Collaborative Schools Initiative at the school and University levels: University facilitators, student teachers, cooperating teachers and school coordinators. It should be noted that I do not see the creation of a Web site as a substitute for person-to-person communication amongst stakeholders, but rather, as a means to facilitate the communication between them. The prototype[1] was built in relation to information acquired from Web site development literature and course work. Upon completion of this study, modifications will be made to the Web site based on new literature, and the recommendations and needs of the respondents.

I have had the opportunity to see the problem of miscommunication from both the school and University perspective. Therefore, it was important to involve respondents from both levels. I discovered that each Field Experience participant has different needs and different roles. Since participants operate on different schedules, they may find it difficult to obtain important information or to contact Division of Field Experience personnel. Information transmission should not be dependent on such obstacles as missing handbooks, office hours, lost facsimiles and phone messages, or slow mail delivery. Rather it should be timely, consistent and accessible. When information is organized and available on the World Wide Web, it is time effective for users. It is important for Division of Field Experiences staff members to be cognizant of these issues when sending updates, handbooks and program changes information to Field Experience participants.

Type of Study

This study involved qualitative data collection and analysis using ethnographic techniques following the interpretive mode of inquiry. Surveys were conducted with school coordinators, cooperating teachers, student teachers and staff from the Division of Field Experiences. In addition, semi-structured interviews were conducted with those

[1] For the remainder of the study, I will be referring to the prototype as a Web site.

cooperating teachers and student teachers who volunteered to be interviewed. Questions in the surveys and interviews pertained to (a) the participants' technological and Field Experience background and (b) the participants' evaluations of the Web site. Particular emphasis was given to the following steps: (a) performing a needs assessment with different Field Experience participants (b) developing a prototype for the Collaborative Schools Web site (c) determining whether or not the site provided information and facilitated communication to stakeholders in the project.

Target Population, Accessible Population, Sample

Members of the target audience included student teachers, cooperating teachers, school coordinators and Division of Field Experiences personnel who were affiliated with the Collaborative Schools Initiative. In addition two other groups were considered members of the target population: those school staffs who were actively involved in Field Experience programs and those school staffs considering an application to be a part of the Initiative. The accessible population consisted of Division of Field Experience staff and those participants involved in the winter 1999 Introductory Professional Term at secondary Collaborative Schools in the Edmonton Public School system. In addition, participants required on-line access to the Internet at home or at school, the address of the Web site and a security password to access this site. The sample included student teachers, cooperating teachers and school coordinators from two of these schools, in addition to four staff members from the Division of Field Experiences.

Delimitations

This study was delimited to a select number of student teachers, cooperating teachers and school coordinators within the Edmonton Public school district who were affiliated with the Collaborative Schools Initiative. For pragmatic reasons, I delimited my study to two schools at which I worked as a University Facilitator. This meant that the two schools were at the secondary level and both were involved in the Introductory Professional Term. Not only did this delimitation provide me with convenient access to the participants, it also provided me with the opportunity to play an active role in the study. Furthermore, at the time of my study, no other Web sites had been created for Field Experience programs. As a result, I chose to concentrate on developing a Web site for the

program with which I was the most familiar. I spent a considerable amount of time translating the necessary documents into HTML. Translation of information from other programs would have meant that additional resources would have been required.

The study was also delimited to three Field Experience staff members at the University. It was important to gain perspective from personnel at the University level as well. These people were selected based on their knowledge, interest and prior involvement in the Collaborative Schools Initiative.

At the school level, data gathering was confined to the last three weeks of the students' Field Experience. It was important not to prolong data collection past the completion of the Field Experience as participants may have had other commitments. At the University level, additional time was provided for personnel to complete surveys.

Limitations

This study was exploratory in nature. Its focus was on whether a Web site could enhance communication to participants in Field Experience programs. I presumed that all participants responded truthfully. However, as a representative of the University, I may have been perceived as having an official role. Some participants may have withheld some criticisms for this reason. These issues were addressed during the interview and in my communications with participants through assurance of confidentiality and full disclosure to each participant.

It is important to note that my choice of school districts was limited to Edmonton Public Schools. Although I worked as a Facilitator in other secondary schools, which were actively involved in the Collaborative School Initiative, I was unable to do research in these schools because of factors beyond my control. For the 1998-99 school year, the Edmonton Catholic School District placed a one-year moratorium on all new Cooperative Activities Program (CAP) research.

Further limitations of this study included (a) my inability to control the amount of time participants spent evaluating the Web site, (b) the inability of participants to be available for scheduled focus groups, (c) my ability to control where participants chose to evaluate the Web site (i.e., at home or at work) and (d) my inability to control the different modem speeds, computer platforms and local area networks within the school and

University.

Significance of This Study

On-line communication technology is providing a rapidly growing number of people with a new medium with which to communicate (Morris & Ogan, 1996; Morrissey, 1999). To date, there has been limited empirical information gathered about Web usability (Nielsen, 1999a) or about the impact of a Web site upon members of an organization (Gay & Lentini, 1995; Ahuja & Carley, 1998; DeSanctis & Monge, 1998). For this reason, this research is anticipated to generate practical information for those people who develop and implement programs, as well as for schools who are interested in providing quality programs for staff, students and beginning teachers. Moreover, the information in this study will be beneficial to all those concerned with enhancing communication in teacher training programs, including researchers and theoreticians.

Definition of Terms

This paper contains two types of terms: those pertaining to Field Experience programs offered by the Faculty of Education at the University of Alberta, (Appendix A) and those relating to Web site usage and development (Appendix B).

Summary

In the first chapter, I have described the research problem, outlined the purpose and research questions, in addition to listing the other necessary elements of my study. In order to establish credibility and reduce researcher bias, I gave a brief statement of my experience prior to the study and of my beliefs regarding the viability of online communication.

There are five chapters that remain in this study. In the next chapter, I will discuss trends and issues in computer-mediated communication as found in the literature. In the third chapter, the method used to answer the research questions will be discussed. In the fourth chapter, I will present the results of the data analysis. In the fifth chapter, the findings will be discussed in relation to the initial literature review. Finally in the sixth chapter, a variety of conclusions will be drawn in relation to the findings and the initial research questions. I will also present some recommendations and final reflections about the study.

Chapter II: Review of the Literature

In this chapter, I review the literature pertaining to a Web site and its ability to provide timely, consistent and useful information to Field Experience participants. Not only do I outline the rationale in support of a Web site, but I address problems associated with Web-based communication and other forms of electronic media. The remainder of this chapter provides a number of technical issues pertaining to Web site use.

A Web Site as a Provider of Timely Information

The Oxford Canadian Dictionary provides the following definition for 'timely': "opportune; occurring, done or made at a suitable or appropriate time" (1999, p. 1520). In the context of this study, "timely" will be applied to (a) the nature of Web-based communication (WBC) and (b) the current reality in education.

The Nature of Web-based Communication

Literature in this area is generally favorable towards Web-based communication (Carroll, 1998; Tapscott, 1998). The World Wide Web can be described as a multi-functional medium used for the delivery of various types of information through a variety of medium formats (Morris & Ogan, 1996; Milheim & Harvey, 1998). Web sites provide users with a convenient mechanism to access information and facilitate communication. When compared with traditional forms of communication (i.e. written communication, telephone conversation, face-to-face interaction), Web-based communication is unique in that it provides users with more opportunities to collaborate more effectively than through technologies such as mailing lists and chat sessions (Ohlund, Andrews, Yu, Jannaasch-Pennell & DiGangi, 1999). Likewise, information can be posted on a Web site and updated on a regular basis for individuals to access at their convenience (Crumlish, 1998).

The literature also reveals some skepticism in regards to Web-based communication. While some individuals prefer to access information on a Web site because it facilitates the task, others find this to be a challenging endeavor. Crumlish (1998) views Web-based communication as an impediment and "a digressive medium that provides the user with an infinite number of possibilities" (p. 19). Instead of relying upon an instructor to guide the learning process, World Wide Web users often perform tasks independently (Crumlish, 1998). As a result, some individuals become frustrated with WBC given its

non-linear structure (Ebert, 1998). Researchers have also reported that more users are becoming "techno-stressed" (Kupersmith, 1992; Landauer, 1995), "information overloaded" (Kupersmith, 1992; Robertson, 1998; Griffiths, 2000; Lewis, 2000) and "isolated" (Landauer, 1995; Stelzer & Vogelzangs, 1995). Although the World Wide Web provides different types of environments for communication among users, their effects are, as yet, largely unknown (Ohlund et al., 1999).

The Current Reality in Education

Recent legislative policies in Alberta provide the impetus for more integration of communication technology into the education sector. These policies focus on two key areas: (a) integrating technology into new curricula and (b) enhancing teaching and learning through the professional growth of teachers. Insight is provided into the impact of these policies on Web site usage. Finally, results from surveys on technology access and use at the school and University levels will complete this section.

Technology integration. In recent years, the Alberta government has done an extensive amount of research to examine ways in which technology can be integrated into the K-12 program of studies for each subject area. A result of this research is the formation of the Information and Communication Technology (ICT) Program of Studies. Under the ICT Program of Studies, students are expected to demonstrate technological skills, knowledge and attitudes in each subject area (Alberta Education, 1998a). According to Taylor (1999), keeping up with these "imposed reforms" may mean an increased workload, not only for students, but also for both new and experienced teachers (p. 9).

In light of criticism from interest groups across North America, several organizations have developed policies relating to technology integration. In 1997, an American task force, comprised of classroom teachers, professors and education experts, released a report entitled Technology and the New Professional Teacher: Preparing for the 21st Century Classroom (Bradley, 1997). The authors provide evidence that new teacher graduates are not fully prepared to use technology as a tool for teaching and learning. Furthermore, they criticized educators in colleges and Universities for using technology as a stand-alone area of study. Upon surveying a given population, the task force for the national organization responsible for accrediting education schools in the United States,

The National Council for Accreditation of Teacher Education (NCATE), was urged to find ways to "remedy the situation" (Bradley, 1997, ¶ 1). The task force suggested that the NCATE accredit only those schools, which had incorporated technology into their programs by the year 2000 (Bradley, ¶ 1).

In another study, researchers from the International Society for Technology in Education (ISTE) asked faculty members from 416 teacher education programs in the United States as to the degree their students were exposed to technology in their classes and during their Field Experiences ("Information Technology Underused," 1999, ¶ 2). Researchers discovered that the majority of faculty members did not practice or model effective technology use in their classrooms. However, where faculty staff integrated technology on a regular basis, students in their classes were found to acquire a higher level of technology skills and experience. Findings related to Field Experience programs yielded similar results (¶ 9). Even though information technology tools were available in most classrooms, student teachers did not often use them during their Field Experience. The researchers suggested that more opportunities should be made for student teachers to observe and practice effective ways of integrating technology into teaching and learning.

Teacher accountability. In Alberta, a new government policy called the Teaching Quality Standard (TQS) is providing an impetus for teachers to become more involved in their personal professional development. The TQS, in effect since September 1999, defines a standard of practice expected of teachers (Alberta Education, 1998b, p. 1). This standard comprises knowledge, skills and attributes (KSAs) that teachers are expected to demonstrate (Alberta Education, 1997, p. 1). Under this policy, teachers are required to identify at least one area for professional development. As well, they must list the indicators they will use to demonstrate growth in this area and submit an annual professional growth plan to their supervisor (Alberta Education, 1998b, p. 2). One of the twelve areas identified for professional development refers to technology integration: "teachers [must] use electronic networks and other telecommunication media to enhance their own knowledge and abilities and to communicate more effectively with others" (Alberta Education, 1997, p. 6). Whether teachers are beginning or experienced users of technology, this focus can provide many professional development opportunities (Alberta

Professional Development Consortium, 1998, p. 9).

Policy impact. It is apparent that technology has impacted educational training institutes in a number of ways. Cuban (1982) sees "change" occurring at two different stages: first order and second order changes. First order changes are "intentional efforts to enhance existing arrangements while correcting deficiencies in policies and practices" (Cuban, p. 93). The main purpose of this stage is to alter the efficiency of the existing system. Second order changes, on the other hand, "are those that try to alter the fundamental ways that organizations are put together because of major dissatisfaction with present arrangements" (p. 93). In the case of these two new policies, the change may be very minimal (first order) and enhance what the organization already does, or the change may be more drastic (second order), as the new policies may radically change the organization.

The amount of impact that the ICT curriculum and the TQS will have on educational organizations and individuals will vary (Alberta Professional Development Consortium, 1998). With this in mind, districts are encouraging teachers to demonstrate the technological knowledge, skills and attributes outlined in the Teaching Quality Standard at their own rate. One such district--the Edmonton Public School District--has developed many initiatives to do this (Edmonton Public Schools, 2000a). In 1994, the District introduced a computerized information management and record keeping system, entitled the Classroom Student Identification System, which most teachers in the district are currently using. In November 1996, the Board of Trustees approved five new district priorities for 1996 to 1999, one of which was "to improve student learning through the appropriate use of technology" (Edmonton Public Schools, 1996). Although technology is not listed as one of the 1999-2002 district priorities, the phrase "provides technology as an enabling tool" is still found within the official policy document (Edmonton Public Schools, 1999). Moreover, all schools have at least one e-mail address and access to the Internet. Other initiatives include the creation of an on-line discussion forum for teachers and a district-wide survey to assess the technology needs in the district (Edmonton Public Schools, 2000a).

Computer access. An analysis of survey findings indicates that computer access and ownership have increased at the school and University level. More students and staff also have access to the Internet. What follows is a brief summary of results from three surveys: the Edmonton Public Schools District Technology Plan Annual Report (2000b), the University of Alberta Student Technology Survey (1998) and the University of Alberta Academic Staff Survey (1997).

The Edmonton Public Schools District Technology Plan Annual Report shows that from 1995 to 2000 there is an increase in the number of students and teachers accessing and using computer technology (Edmonton Public Schools, 2000b). In October 1995, the average number of students to a computer was 22 to 1 (N = 122 schools). In January 2000 this ratio had been reduced to 7.8 to 1 (N = 201 schools). During the same period of time, school staff accessibility had increased as well. The average number of teachers per computer decreased from 4.9 to 1 (N = 122 schools) in 1995 to 1.1 to 1 (N = 199 schools) in 2000. Similarly, the percentage of schools with local area networks connected to most classrooms jumped from 46.3% in September 1997 to 80% in January 1999.

The University of Alberta Student Technology Survey was administered during March 1998. Of the 3890 students that received the student survey, 32.5% (N = 1305) of the students responded (Andrusky, 1998, p. 4). The survey served as an assessment of students' needs for technological support and training services. Three findings are applicable to this study. The first finding relates to computer accessibility. Reports indicate that 98% (n = 1260) of all students either owned or had access to a personal computer (p. 12). The second finding relates to Internet usage. When asked whether using the Internet was helpful in their program of study, 80.9% (n = 1052) of students said "yes" (p. 13). The third finding relates to ways of improving the University's current computer systems. Students felt that it was critical to increase access to student services via the World Wide Web (p. 14). In summary, survey results clearly show that students considered technology as playing an integral role in their University studies.

The University of Alberta Academic Staff Technology Survey was administered in November 1997. It was designed to examine trends regarding educational innovation through technologies and to help determine faculty awareness of existing or planned

initiatives (Anderson et al., 1997, p. 3). Of the 1487 full-time Faculty staff who received this survey, 37% (N = 557) responded (p. 3). Most respondents indicated an interest in technology and felt comfortable using computers (p. 3). Two key findings emerged from the survey. University staff suggested that use of computer technology should continue to increase (p. 14-15). They also indicated a need for increased awareness of educational technology services on campus (p. 19).

Summary

The Collaborative Schools Web site reflects the current reality of education. Recent government policies and educational initiatives place an importance on technology integration. Results from technology surveys indicate an increase in the amount of technology use and access at the school and University levels. It was also found that information can be obtained from a Web site in a time-effective fashion. Literature related to these ideas is used to address the remaining research questions.

Can a Web Site Consistently Communicate Information to Participants in Field Experience Programs?

In order to determine whether a Web site can consistently communicate information to participants in Field Experience programs, literature was compiled from three areas: computer-mediated communication (CMC), business and educational administration. The following factors were reviewed in terms of their relationship to the research question: (a) the organizational structure, (b) the quantity of information being distributed and (c) the method of information transmission.

Organizational Structure

The structure of an organization may be "formal" or "informal." Formal organizations are characterised by a hierarchy of authority, division of labor and explicit rules and regulations (Hoy & Miskel, 1996). Standards and regulations are issued from the top level of bureaucracy and communicated "vertically," through subordinate levels via memos, meetings and reports (Katz & Kahn, 1978). Communication within an informal organization is usually "horizontal" or across the same hierarchical level (Hoy & Miskel, 1996). Horizontal communication is used to "coordinate tasks, problem solve, share information with colleagues, resolve conflicts and build rapport" (Hoy & Miskel, p. 356).

Weick (1976) suggests that organizations that are too formal, centralized or "tightly coupled" may be ineffective in responding to change. As a result of the increasingly changing workplace, many organizations are redefining their purposes and structures and are adopting more decentralized and non-hierarchical structures (Hanna, 1998). Different organizations are coming together as a newly defined unit comprised of representatives from a variety of organizations, creating diverse organizational cultures (Palmer & Speier, 1999, ¶ 2). One of these emergent structures is known as a "virtual organization" (DeSanctis & Monge, 1998, ¶ 1).

Virtual organizations. A virtual organization (VO) is one in which individuals are separated geographically. These individuals may or may not belong to the same organization but they all communicate and work toward a common goal via information technology (Travica, 1997; DeSanctis & Monge, 1998). Although little empirical research has been done on VOs (Travica, 1997), there is some literature that relates to the structure and performance of such organizations (Ahuja & Carley, 1998). Also, literature refers to organizational identity within virtual settings (DeSanctis & Monge 1998; Morrissey, 1998).

Given that VOs generally have few characteristics of a traditional organization (i.e. no centralized buildings, no physical plant) they have been found to be more efficient, flexible and decentralized in nature (Ahuja & Carley, 1998). Virtual organizations were found to adopt both non hierarchical and hierarchical structures (Grabowski & Roberts, 1998). Ahuja and Carley (1998) argue that a hierarchical structure is efficient at disseminating information on a particular topic, whereas a non hierarchical structure is effective at promoting discussion and decision-making.

In an age characterized by larger quantities of information and more flexible working environments, it becomes challenging for individuals to define themselves in relation to the organization (Wiesenfeld, Raghuram & Garud 1998). Kogut and Zander (as cited in Wiesenfeld et al., 1998) note that when members identify strongly with the organization, they are more likely to accept organizational goals as their own. In a virtual environment, traditional means of organizational identity such as dress code, shared routines and shared office space do not exist. Lucas and Baroudi (1994) propose that traditional means of organizational identity can be replaced by adding more interactive

means of organizational identity such as employee relation programs, workplace incentives and professional development opportunities. Wiesenfeld et al. (1998) conducted a study on how employees build and sustain organizational identity in a virtual context. Their findings indicate that traditional modes of communication (face-to-face, telephone, formal letters) are good for *establishing* organizational identity, while electronic modes of communication (e-mail, conferencing, Web sites) are good for *maintaining* organizational identity (Wiesenfeld et al., ¶ 54).

Amount of Information

Prior studies in electronic communications reveal that as the volume of information increases, efficiency decreases (DeSanctis & Monge, 1998). By filtering sites and documents into pre-configured groups, Puzzanghera (1999) proposes that Knowledge Management (KM) allows people to access information more efficiently. KM is the process of converging CMC technologies (i.e., e-mail, Internet, company Intranet, databases, word-processing documents, etc.) into one main information base which is commonly referred to as a "portal" (Emery, 1999, p. 14). By using a portal, information can be customized (Reynolds & Koulopoulos, 1999). Many large corporations are using portals (Emery, 1999). A simple Web search indicates that portals are also used in education (i.e., http://www.ezschool.com, http://eduport.com).

Daft and Lewin (as cited in in Wiesenfeld et al., 1998) argue that information transmission within electronic organizations is instrumental in creating a more productive working environment. The rapid growth of computer technology has a powerful influence on how businesses organize and communicate (Morrissey, 1998). The increased use of CMC technology has created an "Information society" where "knowledge workers" are an integral part of the new working environment (Tapscott & Caston, 1993; Drucker, 1994; Tapscott, 1997). With people spending more time using technology (i.e., telephone, fax machines, e-mail, the Internet, on-line conferencing, etc.) to communicate with one another, there is also an expectation for communication within virtual organizations to be rapid and customized (Emery, 1999).

Method of Information Transmission

By adopting new information technology, society has many more choices in how information is transmitted. However, the "channel" or form in which a message travels can influence how it is interpreted (Hoy & Miskel, 1996). Researchers in the field of media choice investigate and analyze why people choose different forms of communication (Coltman & Romm, 1997). Two theoretical frameworks have emerged to explain media choice: (a) Rational Choice Theories and (b) Social Influence Theories. Rational Choice Theories attempt to explain media choice by way of objective measures, which are mainly efficiency-driven. However, due to the functional nature of Rational Choice Theories, Social Collective Theories have emerged to explain the more subjective aspects of media choice. This section includes an overview of these theoretical frameworks and an explanation of how they relate to the research question.

Rational choice models. Often criticized as being too deterministic (Kock, 1999), Rational Choice Theories have provided the backbone for most Media Choice literature. Three theories have emerged in this area: (a) Social Presence Theory, (b) Grounding Theory and (c) Media Richness Theory (MRT).

In Social Presence Theory, the psychological aspect of using communication media is emphasized: media choice depends upon the degree to which the medium is warm, personal and sensitive. Study findings yielded limited results and only provide a small explanation of variance in media-related behaviour (Yu, 1997).

Grounding Theory is not prevalent in the literature, however its theoretical framework is applicable to this study. Under this model, people choose a medium according to the communicative purpose. In order for two people to effectively communicate, Clark and Brennan (1991) state that mutual knowledge, beliefs and assumptions must be developed. "Grounding" refers to the process of establishing and maintaining this mutual understanding (p. 135). However, Clark and Brennan predicted that various media would impose specific constraints during the grounding process. Table 1 refers to seven media and their associated constraints.

Table 1

Seven Media and Their Associated Constraints (Clark & Brennan, 1991)

This part of page 21 has been removed due to copyright restrictions. The information removed was Table 1 in Clark and Brennan (1991, p. 142). The table provided the constraints upon individuals when using seven different types of media.

According to Clark and Brennan, each medium provides different opportunities for coordinating activities and establishing understanding. Face-to-face interaction requires people to share time and space, providing many visual and auditory cues. As a result, electronic mail users may lack the feeling of being in direct contact with others. However, they are still able to review and revise data contained in electronic messages.

Media Richness Theory provides a more comprehensive explanation of media choice. Originally proposed by Bodensteiner (as cited in Andersson & Svenfelt, 1999), MRT suggests that as the content of communication becomes more ambiguous or redundant, "richer" media will be selected to improve communication performance. Likewise, when the content is more certain or unequivocal, a leaner medium will be more efficient to complete the information task.

What constitutes a "rich" medium? Bodensteiner (1970) describes a medium's richness as the capacity of data to carry information which brings a new understanding to a situation. Lengel (as cited in Kydd & Ferry, 1995) indicates that a medium is rich if it provides immediate feedback, multiple cues and language variety, in addition to being personal (Table 2). In early Media Richness studies, face-to-face interaction was found to be the richest medium, followed by the telephone, e-mail, letters, memos and quantitative

reports (Trevino, Daft and Lengel, 1990). More recent MRT studies using newer forms of information technology yield similar results to those of Trevino et al. (1990). Irani (1998) performed a study on students in a virtual University course. She found that when students were engaged in face-to-face interactions, video conferencing or chat boards, these media were perceived as rich. However, when students used textbooks, prerecorded videos or multimedia presentations, these media were perceived as "lean."

Table 2

Characteristics of Media Richness (Lengel, 1983)

This part of page 22 has been removed due to copyright restrictions. The information removed was Table 2.1 from Yu (1997). The table provided an original classification criteria of media richness according to Lengel (1983).

Daft and Lengel (1984) suggest that if a highly rich medium such as face-to-face communication is used for a routine, equivocal task, then ineffective processing will occur (Figure 2). When Media Richness Theory was applied to organizations, Daft and Lengel found that organizational success was based on the "organization's ability to process information of appropriate richness to reduce uncertainty and clarify ambiguity" (p. 194).

This part of page 23 has been removed due to copyright restrictions. The information removed was Figure 2.1 from Yu (1997, p. 4). The figure showed that effective information processing occurs when a particular type of media is used to perform a specific type of task.

Figure 2. Relation between Media Richness and task equivocality (Yu, 1997)

MRT was very prevalent in communications literature in the 1980's. More recently researchers are questioning whether MRT is still applicable given the emergence of new CMC tools such as electronic mail, virtual conferencing and Internet applications. Some researchers argue that the theory continues to be relevant (Irani, 1998; Andersson & Svenfelt, 1999). Others argue that the nature of the Media Richness model is too limited and fails to recognize the social context of an organization (Fulk, Schmitz, & Steinfield, 1990; Kydd & Ferry, 1995; Bosch-Sijtsema, 1997; Lee & Ngwenyama, 1997; Yu, 1997; Kock, 1999).

Social influence models. Weick (1969) states that "it is through the process of enactment that people, not electronic communication media, bring about the richness that they experience in their communications" (in Lee & Ngwenyama, 1997). His "process of enactment" provides the basis for the Social Influence model. Under this model, media perceptions are socially constructed and determined by attitudes, statements and behaviours of co-workers. Perceptions of "richness" vary in a non random fashion and they are directly linked to social context and media experience factors (Fulk et al., p. 130). People who had more experience using a particular medium found it to be richer than those with

less experience (Kydd & Ferry, 1995; Bosch-Sijtsema, 1997; Yu, 1997).

Rogers (1983) proposes a more evolutionary model, where "the usefulness of a new communication system increases for all adopters with each additional adopter" (p. 120). Rogers (1995) explains that some individuals will take longer than other individuals to change their current ways. He identifies five categories of people in adapting to change and places the categories in the chronological order of adaptation to the innovation: innovators, early adopters, early majority, late majority and laggards (Rogers, chap. 7). The first two categories refer to the people instigating the change, while the middle category is usually the group of individuals who determine whether the innovation will be adopted. It is usually within this group where the "critical mass" of users is attained. Parallel to the concept of critical mass in nuclear physics, critical mass in the area of social sciences refers to the point at which a certain number of individuals choose to a adopt a medium due to its unique characteristics, so that it becomes a universal access medium (Markus, 1990). The early majority category of users usually leads the last two categories of users into adopting the change (Rogers, 1995). Valente (1995) notes that the critical mass is achieved when about 10 to 20 percent of the population have adopted the innovation. When this level has been reached, the innovation can be spread to the remainder of the social system (late majority, laggards). The concept of critical mass on the Internet could be looked upon as a variable, rather than a fixed percentage of adopters (Morris & Ogan, 1996). For example, fewer people are required for sustaining a chat room than may be required for a larger type of discussion group.

In more recent literature, a newer set of adaptive theories have emerged to explain inconsistencies in MRT as they relate to new communication technologies (Carlson & Zmud, 1994; Dennis et al., 1996; Yoo, 1996). The basic premise behind these theories is that Media Choice Theories must be able to adapt to an evolving set of social contexts. Findings suggest that when a group of users increase their collective knowledge, experience and familiarity of a particular tool, they go beyond the limitations set forth by previous Media Richness studies (Lee, 1994; Markus, 1994). Morris and Ogan (1996) also suggest that the alternative Information Richness Theories may be needed for emergent Internet communication. They explain that current Media Choice Theories may overlook the

Internet "multi" medium and classify it as one "mass" medium (¶ 11).

Summary

An analysis of the literature revealed three factors that influence a Web site's ability to consistently communicate information to its users: (a) the organizational structure, (b) the amount of information and (c) the method of information transmission. Critics of formal organizations suggest that these structures are too tightly-coupled to effectively respond to the changing technological landscape of the Information Age. Several researchers indicate that there is an impetus for organizations to become "virtual" and adopt a more decentralized structure. Theories pertaining to media choice were explored to determine whether a Web site is an effective method of information transmission. Both Rational Choice and Social Influence theories suggest that a Web site is a form of lean media that is effective in transferring equivocal information. Notably, Web sites should be used in conjunction with richer media such as face-to-face interaction or the telephone.

What Considerations are Necessary to Effectively Use a Web Site?

Introduction

It is estimated that 375 million people will have access to the World Wide Web by the end of year 2000 (Internet.com Corporation, 2000). Given the large number of potential users, with varying ability and technological backgrounds, designing for such an exponential audience can extremely challenging (Rajani & Rosenberg, 1999). Contrary to "closed systems" (e.g., CD Roms, tutorial software, etc.), where designers have control of content and navigational features, designers of "open systems" (e.g., Web sites) relinquish that control to the user (Jones & Farquhar, p. 239). To create exceptional Web sites, designers must understand users and how they think (Rosenfield & Morville, 1998; Nielsen, 2000a). Therefore, "usability" is about designing things so that they make sense to the people who use them (Rowland, 2000a, ¶ 1). There are four main items that Web site developers need to consider: (a) a needs assessment, (b) the potential user, (c) the user's Web environment and (d) Web site development.

Needs Assessment

When an innovation, such as a Web site, is introduced into an organization, a certain amount of change takes place in its infrastructure (Cuban, 1982; Siegel, 1997). The

success of an innovation largely depends on the way in which it is implemented and the time taken to complete the process (Boettcher & Schwartz, 1997). Goals and objectives should be developed based on the needs of users (Milheim & Harvey, 1998). It is more likely for users to adopt an innovation if they perceive it to be compatible with their past experiences, existing values and future needs (Rogers, 1995, p. 224).

A "needs assessment" is a way of obtaining support from those who will be directly affected by the innovation (Bailey, 1997). It should be "purpose-based" (Rossett, 1987, p. 25). In terms of Web site development, a needs assessment should be conducted prior to its implementation (Boling & Frick, 1997; Fulop, Loop-Bartick & Rossett, 1997). According to Cole and Geissler (1998), the needs assessment process generally involves six steps: (a) collecting information on the user, (b) developing a prototype, (c) collecting data, (d) analyzing data, (e) refining the prototype and (f) implementing the full-scale model.

Collecting information on the user. Milheim and Harvey (1998) suggest that information should be collected about the user's computer knowledge and skills, previous on-line experiences and their working environment. Fulop et al. (1997) add that users should provide feedback as to the type of content and design that should be on the site.

Developing a prototype. A prototype is usually holistic--it is not the entire Web site. It usually is "the top-level structure of the Web site [with] enough strands to exemplify its primary features" (Boling & Frick, 1997, p. 319). While "Web-based prototyping" has been found to work in testing small sets of Web pages (Boling & Frick, p. 320). Many prototypes are simulated on paper (Horton, 1994, p. 301).

Collecting data. There are several methods to collect usability data. Automated page tracking mechanisms can be used for gathering quantitative usability data (Rosenfeld & Morville, 1998, p. 173). Opinion surveys and focus groups provide rich data over a long period of time (Rossett, 1987, p. 26) and are especially appropriate for collecting data "from a loose and voluntary affiliation of participants" (Fulop et al., 1997, p. 23). Ethnographic methods such as user testing involve evaluators observing participants in their "natural" environment (i.e., workplace) and interpreting participants' behaviour patterns while doing a particular task (Horton, 1994; Haggard, 1998; Church, 1999). Usability engineering methods such as heuristic evaluations involve small groups of

evaluators examining a product and judging its compliance with recognized usability principles (Nielsen, 1998a, ¶ 1). In heuristic evaluations, only a small number of users (N = 5 to 15) are needed to find the usability problems in a product (Figure 3).

This part of page 27 has been removed due to copyright restrictions. The information removed was Figure 2 from Landauer & Nielsen (as cited in Nielsen, 1998a). The figure showed a calculation of the number of test users required to find usability problems.

Figure 3. A calculation of the number of test users required to find usability problems, according to Landauer & Nielsen (as cited in Nielsen, 1998a, ¶ 17).

Analyzing data. Web site usability tests are able to reveal problems at the "site level" and at the "page level" (Nielsen, 1998b). At the site level, there may be problems with the home page or with the overall site (i.e., navigation, writing style, page templates, graphics or layout). At the page level, there may be problems with individual graphics, icons and links or with the inclusion or exclusion of specific information (Nielsen, 1998b). In the evaluation of large Web sites, page-level usability problems become problematic as there is a higher probability that many pages will not be viewed by users. Therefore, specialized user tests should occur on selected pages, such as registration pages, where users can download software or files from the Web site (Nielsen, 1998b).

Refining the prototype. Web site development can be described as an evolutionary process (Lowe, 1999a) or an iterative process (Nielsen, 1995). In other words, during Web site development, many parts of the Web site are refined and tested to ensure overall usability (Haggard, 1998). Modifications to the site will depend on the detection of usability problems. Molich and Gram (1998) classify usability problems into three categories according to their degree of severity. "Cosmetic" problems are minor problems that temporarily frustrate users. "Serious" problems generally slow down users, but allow them to complete their task. Serious problems and cosmetic problems are often alleviated by minor changes to the site. "Catastrophes" prevent the user from completing a task and may require a major reconstruction of the site (Molich & Gram, p. 6).

Implementing the full-scale model. To ensure that there is an ongoing evaluation process, Reeves (1998) suggests that a committee be established to monitor Web site use, ensure appropriate content, privacy and maintenance. An accountability process for the participants is generally put into motion (Rogers, Andres, Jacks, Clauset, 1990). Steps for on-going needs assessment should also be established (Fulop et al., 1997, p. 27).

The User

The most essential element for Web developers to consider is the potential user of the site (Boettcher & Schwartz, 1997; Nielsen, 2000a). When Web developers understand users, they are able to create more enjoyable on-line experiences (Rowland, 2000b) and establish trust (Nielsen, 2000a). Recent studies of Web users show that Web developers need to consider (a) users' level of experience and (b) users' on-line behaviour patterns.

Level of expertise. Nielsen (1997a) compares using the Internet to pulling a long chain: "if any one link breaks, then the entire venture breaks" (¶ 8). While an experienced user typically knows what resources will to fix a problem, novice users do not know what to do (Nielsen, 1997a). Consequently, developers have traditionally catered Web site construction towards novice users, making their sites easier to use (Sugrue & Kobus, 1997). However, this sometimes frustrates the expert user (Rajani & Rosenburg, 1999, ¶ 5). In an effort to increase the number of loyal users to their sites, Web developers have begun to place more emphasis on "expert performance" as well (Nielsen, 2000b). Web innovations that recognize the needs of both expert and novice users include: (a) smooth

navigation paths and fast-loading pages; (b) shortcuts for the experienced user that are invisible or downplayed for the novice user; (c) "training wheels" interfaces where the average site visitor can use a simplified design that is easy to learn and expert users can use an advanced design that is more powerful; (d) in-depth content and advanced information in particular areas on a site (Nielsen, 2000b).

On-line behaviour. Usability studies suggest that most Web users are conservative in that they prefer a minimalist design with an interface that is consistent and easy to use (Nielsen, 1998b). They are task-oriented and use the Web to save time and quickly retrieve information (Rajani & Rosenburg, 1999). As people become more dependent on the World Wide Web, users are "expecting more" and "doing less" (Nielsen, 1999b). While users are less inclined to learn new interaction techniques and download new applications, they expect information to be delivered more immediately. If there is any delay in "system response time" (SRT), users want to know why (Sears, Jacko & Borella, 1997). SRT is defined as the time between the user's input and the computer's response and is widely recognized as one of the strongest stressors of human-computer interaction (Thum, Boucstein & Kuhmanp, 1995). Miller's study (as cited in Nielsen, 1993) found that even the smallest amount of SRT has an impact on user behaviour (Table 3).

Table 3

How Response Times Can Affect a User's Behaviour

This part of page 30 has been removed due to copyright restrictions. The information removed was a table from Miller (1968, pp. 267-277) (as cited in Nielsen, 1993, chap. 5). The table shows how delays in SRT in human-computer interaction can affect a user's behaviour.

Eye tracking studies such as the Stanford Poynter Project (http://www.poynter.org/eyetrack2000/index.htm) indicate that few people read every word on a computer screen. Instead, people scan for key words. Users are first drawn to text (i.e., headlines, article summaries and captions) and often do not look at the images until the second or third visit to a page (Spool, 1998; Nielsen, 2000c). This phenomenon, known as "banner blindness" (Benway, as cited in Rajani & Rosenberg, 1999), becomes especially problematic when these images contain navigational aids and instructions that help the user navigate the site. The challenge for a designer is presenting information in both an interesting and meaningful manner (Rajani & Rosenburg, 1999).

Web-Based Environment

Web sites are not "stand-alone applications" (Jones & Farquhar, 1997, p. 239). They are a part of the World Wide Web, a computer-based hypertext medium that depends on a world-wide network of computers (Descy, 1997). This means that, through using the

WWW, users can browse Web sites that reside on other computers throughout the world (Nielsen, 1998c). The Internet was designed to be software driven and hardware invisible. This implies that computers with different platforms (i.e, Windows and Macintosh operating systems) can be interconnected, providing the appropriate software or instructions are used to configure them (Descy, 1997).

One underlying problem of Web-based environments is that many institutions lack the financial resources to maintain systems that are up-to-date (Rossner & Stockley, 1997). Northover (1999) reports that staff and students in his Faculty constantly struggle to update operating systems and reconfigure networks. Changes in system software require updating access procedures and compatible applications (Rossner & Stockley, 1997). As a result, components required in a Web-based environment can vary considerably (Appendix C).

Two technical items emerged as factors that can influence Web site usability: (a) Web browsers and (b) network connection speeds.

Web browsers. Users need Web browsers to navigate, locate and display Web pages on their computer. Some browsers display text only. However, the most widely-used browsers--Netscape Navigator and Microsoft Internet Explorer--are graphical and display both graphics and text. Updated versions of Web browsers are able to support an increasing number of multimedia documents (i.e., video and sound files). Although browsers are becoming more complex, usability tests indicate a reluctance on the part of Web users "to embrace new technology" (Nielsen, 1999c, ¶ 2). New users do not necessarily know how to upgrade their browser, so they continue to use the version that is installed on their machine. As a result, Web sites should continue to be compatible with 3.0 versions of Netscape and Explorer until 2001 (Nielsen, 1999c).

The World Wide Web is a domain which must be "instantly usable" (Rajani & Rosenberg, 1999, ¶ 1). Therefore the interface--the way in which the Web browser presents and retrieves information to the user--must both effective and efficient (Nielsen, 1995; Rosenberg & Morville, 1998). Accordingly, the browser must have reliable navigation support features that enable users to move around on the Web (Nielsen, 1998c).

Network connection speed. In a number of studies, users rated speed to be the primary factor influencing usability (Nielsen, 2000a, p. 42). A delay in SRT can be attributed to one of five parts of a computer network: (a) the throughput of the Web server, (b) the server's connection, (c) the user's connection, (d) the speed of the user's browser and computer or (e) the Internet itself (Nielsen, p. 45). As a general rule, SRT decreases as an area of a network is upgraded. However, the speed may be lower than desired because other areas have a cumulative effect on its performance. The speed of the user's browser rarely has a large impact on SRT, however low-end or older machines may take extra time to download or use certain items (i.e., complex tables, Java applications) (Nielsen, p. 45). A faster connection to the Internet not only saves time. If the commercial Internet Service Provider charges an hourly rate, a faster connection can be economical as well (Descy, 1997).

Web Site Design and Development

The design of a Web site plays a significant role in determining its usability. Although users may perceive the Web site as one interface, it is actually a combination of various interfaces (Nielsen, 1995, p. 282). Prior to elaborating on these elements, I will provide a brief overview of different approaches to Web site design. Next, I will describe the three areas of Web site design and development : (a) Web site management, (b) interaction design and (c) content design.

Overview of Web site development methodologies. While there has been a plethora of literature relating to Web site development, our understanding of an effective Web site design is still very immature (Lowe, 1999a, p. 17). What is missing is information on the processes and methods for "rigorously developing sites" (Lowe, p. 9). Web engineering is a field that has emerged to provide scientifically-based, practical solutions to Web design (Lowe, 1999b). Lowe (1999a) indicates that most Web engineering literature is in the form of design checklists and style guides such as those of Lynch and Horton (1997) and Berners-Lee (1998). Knupfer, Clark, Mahoney and Kramer (1998) find that these guides are useful from a technical standpoint, however they lack consistency in terms of information pertaining to good screen design and the use of icons for navigational purposes. Lowe (1999b) suggests that "Web gardening" is an appropriate model for Web

site design. Lowe's (1999b) model combines Web engineering principles with "ad-hoc" models of site design. Lowe's premise is that Web engineering's strict design principles are more applicable to the initial development of a Web site, but not flexible enough for site maintenance. Consequently, the ongoing maintenance or evolution of a Web site lends more to the analogy of "tending a garden" (Lowe, 1999b).

Web site management. Web management is based on the tenet that a governing body needs to exist to deal with the various issues of developing and maintaining a Web site (Nielsen, 1997b). Web managers are responsible for defining goals, developing project plans, establishing standards, supervising content and managing security (The Association of Web Professionals, 2000). Depending on the size of the site, many people may be involved in the management of the Web site (Reeve, 1998). These people should not only have a solid understanding of the organization's mission and goals, but also have technical knowledge of the software and hardware required to create and maintain the site (Reeve, 1998). The "central management" team should be also responsible for ensuring that pages of a Web site follow a consistent format and that the information is accurate and representative of the organization (Nielsen, 1997b).

Interaction design. Interaction design refers to the ease in which users are able to navigate through a Web site and interact with its components (Keeker, 1997). Although results from usability tests consistently show that users are goal-oriented and look for the content while ignoring the navigation features, interaction design still plays a large role in the usability of a Web site (Nielsen, 2000d). There are several key features to consider in interaction design: (a) hypertext, (b) consistency, (c) relative location, (d) links, (e) the "back button," (f) information retrieval, (g) continuous feedback and (h) visual display.

A Web site can be described as an information space in hypertext (Nielsen, 1995). When users search for information in this type of environment, they may become "lost in hyperspace" (p. 247). This is a phenomenon which occurs when users are disoriented or are having trouble finding the information they need. Given hypertext's non-sequential properties, "there is no single order that determines the sequence in which the text is to be read" (Nielsen, p. 1). This creates problems for Web designers, as it is the users who control the navigation. Therefore, Web designers need to find ways of accommodating and

supporting user-controlled navigation (Nielsen, 2000a, p. 214).

Probably the designer's most powerful tool is consistency (Nielsen, 1999d). For this reason, designers must be deliberate and consistent in the placement and presentation of navigational links and buttons (Sugrue & Kobus, 1997; Nielsen, 2000a) and color, background and text (Milheim & Harvey, 1998).

In order for navigation to be effective, users must always know where they are and where they can go. Nielsen (2000a) suggests that Web pages contain information about the location, relative to the Web as a whole and relative to the site's structure (p. 189). The "bread crumb approach" is a simple way of showing a user's relative location within a Web site. It shows the full hierarchal path from the home page through all the levels to the current page (Nielsen, 2000a, p. 203).

Most Web navigation is achieved through textual or graphic hypertext links. These links enable users to "jump" from one point to another in the World Wide Web. Links should be (a) embedded within the text (Nielsen, 2000a); (b) clearly labelled (Jones & Farquhar, 1997); (c) provide users with limited choices (Hall, 1999); (d) always given within the content of the text (Rosenfeld & Morville, 1998). Accordingly, when a site has a large number of graphic links, there should always be corresponding text links available to the user (Spool, 1998).

Users should be able to navigate back to a starting point or to the home page (Goldberg, 1997). While this can be done through the use of links, it can be also be done through the back button on a Web browser. The back button is the second most used navigational feature on the Web (Nielsen, 1999d). It serves as a lifeline for the user who can go back to familiar territory (Nielsen, 1995) and return to recently visited pages (Greenberg & Cockburn, 1999). Since the back button is essential for the users' confidence, it must always be available and accessed in the same way (Nielsen, 1995, p. 249).

Information on a Web site should be easy to find. Nielsen (2000a) suggests that users have a variety of ways to retrieve information. Nielsen found that more than 50% of all users are search-dominant, about 20% are link-dominant and the remainder of users

display mixed behaviour (p. 224). Search engines are a useful way of retrieving information, particularly on sites with more than 100 pages (Nielsen, 1999d). When users need to find information from a Web site, they type key words into the search engine. Results of the search are prioritized and displayed according to relevance and quality (Rosenfeld & Morville, 1998; Nielsen, 2000a). Link-dominant users have several choices to find information on a Web site. Depending on the site, users may be able to use a "site map," a "table of contents," or an "index." A site map is a "graphical representation of the architecture of a Web site" (Rosenfield & Morville, 1998, p. 67). It is usually found on a single Web page and lists all of the major links to pages on a Web site (Nielsen, 1995, p. 258). A table of contents is found in a site that lends itself to hierarchical organization (Rosenfield & Morville, 1998, p. 67). It is a list of links found at the side or top of a Web page and indicates what users will find on that page (Rosenfield & Morville, 1998, p. 67). An index is used for sites that are less structured. In an index, the user is presented with a list of hyperlinked keywords or phrases. Therefore, the size and organization of a Web site are factors in determining which information retrieval options the designer will use to optimize the Web site's usability.

The relationship between Web designers and users is vital to the long-term success of a Web site (Lynch & Horton, 1997). When users encounter network-related problems, the benefit of a "convenient delivery medium quickly evaporates" (Wiesner, 1998, ¶ 4). For this reason, help should be readily available. There are a variety of ways that designers can provide continuous feedback to their users. One way is by including explicit instructions on each Web page. These instructions should be brief and include page screenshots (Nielsen, 2000a, p. 129). Another way is by including access to additional on-line documentation, found on another page or site, or on a document that can be downloaded to a user's computer (Nielsen, 1995, p. 68). Other ways of providing continuous feedback to users include (a) "frequently asked questions" pages (Crumlish, 1998, p. 188), (b) "help areas" (Rosenfeld & Morville, 1998, p. 120), (c) error-messages (Nielsen, 1995, p. 70) and (d) guided tours or tutorials (Rosenfeld & Morville, p. 69).

Conversely, users also may want to provide feedback to a Web site's editor or designer (Lynch & Horton, 1997). Designers can provide a variety of ways to solicit user

feedback: (a) adding an e-mail link to the site's editor at the bottom of each Web page (Lynch & Horton, 1997); (b) adding a link to an on-line "questions and suggestions" form (Rosenfeld & Morville, 1998, p. 172); (c) adding a link to a Web page that has an editor or author's biography and contact information (Nielsen, 1999d). Biographies and photographs are different than e-mail links and on-line forms in that they help to make the Web site a less impersonal place (Nielsen, 1999d).

An analysis of Web development literature reveals that an effective visual display is simple, aesthetic and functional. Relatively few colors should be used (Nielsen, 2000a). Page pattern and contrast must be consistent (Lynch & Horton, 1997). Text and graphics should be organized into tables (Lynch & Horton, 1997). Text and icons must be legible (Hill et al., 1997). The colors of backgrounds, images and text must be appropriate (Knupfer et al. 1997). The graphics, text and materials should serve a clear and instructional purpose and not clutter the vision of the user (Knupfer et al. 1997). Icons must be clear and consistent (Milheim & Harvey, 1998). The icons should reduce the amount of text and be easy to remember (Horton, 1994).

Content design. Content is the most important part of a Web site (Nielsen, 2000a, p. 100). There are two types of content on a Web site. "Macrocontent" refers to the information and graphics found on a Web site. "Microcontent" refers to the small items on a Web site such as page titles, headlines, HTML code, meta tags (Rosenfeld & Morville, 1998). In order for content to be presented effectively, it must be (a) relevant, (b) current, (c) succinct and (d) appropriate (Keeker, 1997).

Relevant content refers to information that is important for the user. Therefore, information should be prioritized from most important to least important. Nielsen (2000a) suggests that an "inverse pyramid structure" be used (p. 112). An inverse pyramid structure means that headlines and conclusions appear at the top of the page. If a user wants to know more about a particular subject, they can continue scrolling down the page or click on an embedded link.

To ensure that content is current, Web sites should be updated regularly (Reeve, 1998). When a specific Web page is updated, designers should place a date at the bottom of

the page. Web sites must also be continually maintained (Nielsen, 1997b). This includes the maintenance of graphics, text and "link rot" (Sugrue & Kobus, 1997). Link rot occurs when a Web page contains a link to a page that is no longer available. Link rot has been shown to significantly influence the usability of a Web site (Graphics, Visualization & Usability Center's WWW Surveying Team, 1997).

Hall (1999) reports that the most consistent theme across Web site development literature is is how to limit Web page content. Nielsen (2000a) specifies that online text should be limited to 50% of the text used in a hardcopy (p. 101). Three findings from usability studies explain this recommendation: (a) users read slower from a computer screen than they do from paper (Landauer, 1995, p. 249), as much as 25% slower (Nielsen, p. 101); (b) users feel unpleasant when reading on-line text (Landauer, 1995, p. 249); (c) users do not like to scroll down a page (Hall, 1999, p. 1). Based on these findings, content designers should write succinctly, highlight key points and reduce large amounts of information into smaller segments (Landauer, 1995; Rosenberg & Morville, 1998; Nielsen, 2000a).

Designers need to consider whether the content of their Web sites is appropriate or credible for potential users. Therefore, the type of information posted on a Web site should positively and accurately represent the organization (Reeve, 1998). Credibility is increased when: (a) writing is free of promotional language, grammatical mistakes and spelling errors (Nielsen, 1999a); (b) graphics and information are copyright-free (Zobel, 1997; Nielsen, 2000a); (c) external links are made to appropriate sites (Reeve, 1998). If an item is not appropriate, then the Web designer must either modify it, remove it, or post a warning to users who enter the site (Reeve, 1998).

Given the conservative behaviour of Web users, designers must consider whether large graphic files (i.e., images, photographs, icons) are needed and whether the requirements for multimedia features are appropriate. File size is the factor over which Web designers have the most control (McCulloh, 2000). If a Web site is too rich in graphic files, it "can turn the information superhighway into a gravel road" (Boettcher & Schwartz, 1998, p. 283). In order to increase download speed, graphics should be reduced to a low resolution that requires less memory (Nielsen, 2000a, p. 134). Animations and special

multimedia features (i.e., audio, video) can enhance the look of a Web site, however, they can also hinder its usability (Sugrue & Kobus, 1997). Software or "plug-ins" (i.e., Macromedia Shockwave, Adobe Acrobat Reader, Flash) may be required to use these features (Descy, 1997). If this is the case, designers must provide links to the location from which the plug-ins can be downloaded (Descy, 1997).

Summary

There are many factors that need to be considered when developing a Web site. Of primary importance is the potential user of the Web site. A needs assessment is an effective way of involving the user in the development process. Data should be collected to determine the user's needs, level of experience and Web-based environment. Results from usability tests show that users lose confidence in a Web site when they are unable to find information or wait too long for a page or graphic to download. Therefore graphics and text should be used sparingly to reduce download time. The content should be succinct and organized in such a way that the user can scan and retrieve the information quickly. Information and navigational features within the site should be consistent, organized and easy to use. Furthermore, continuous feedback should be provided to the user, explaining why a feature does not work and where to obtain assistance.

How Useful is the Web Site Prototype?

"Useful" is a term used to describe whether a system is able to (a) "achieve its desired goal" (Nielsen, 1995, p. 281) or (b) "provide benefits" to potential users (Oxford Canadian Dictionary, 1999, p. 1600). The literature in this section is not extensive given that much of it has been covered previously.

Achieves its Desired Goal

According to Nielsen (1995), usefulness is a central component in determining whether a system will be accepted (Figure 4). The usefulness of a system can be characterized in terms of (a) its "usability" and (b) its "utility." Usability refers to how individuals can use the system (p. 281). Usable systems are (a) easy to learn, (b) efficient to use, (c) easy to remember, (d) free of error and (e) pleasant to use (pp. 283-284). Utility refers to whether the innovation can do what is needed (p. 281).

This part of page 39 has been removed due to copyright restrictions. The information removed was the figure on page 280 from Nielsen (1995). The figure shows the various elements involved in obtaining system-wide acceptability of an innovation.

Figure 4. The various parameters associated with system acceptability (Nielsen, 1995, p. 280)

Provides Benefits to Potential Users

An analysis of the literature reveals that Web-based communication offers several benefits for potential users in that it is (a) interactive, (b) convenient, (c) cost effective and (d) time effective (Goldberg, 1997; Khan, 1997; Tapscott, 1997). However, experts caution that individuals should continue to use traditional forms of communication and not become overly dependent on WBC (Landauer, 1995; Buchanan, 1998; Kearsley, 1998).

Interactive. Individuals are able to interact with the content of a Web site as well as with other users through tools such as conferencing software (Hollenbeck, 1998) or "hypertext" (Nielsen, 1995). Hypertext provides users with the flexibility to (a) choose the order in which they view the content of a Web site (Schwier & Misanchuk, 1993), (b) access other sites to obtain resources (Khan, 1997; Montgomerie & Harapnuik, 1997) or (c) contact experts in a particular field of study (Bannan & Milheim, 1997; Montgomerie & Harapnuik, 1997). Computer conferencing tools allow interactions to be (a) "asynchronous," where users contribute to on-line conversations at different times or (b) "synchronous," where users engage in "real-time" conversations with one or several other users (Bull, Dawson, Schoeny & Bull, 1998). Asynchronous conference software allows users to review or post messages on electronic message centers (Ohlund et al., 1999).

These centers are known as on-line forums (Anderson & Kanuka, 1997), electronic discussion groups (Montgomerie & Harapnuik, 1997) or bulletin boards (Goldberg, 1997). Synchronous conferencing tools allow users to exchange information in a variety of ways. For example, text or audio messages are exchanged through Web-based "chat" tools (Welsh, 1997; Ohlund et al., 1999). Schwier & Misanchuk (1993) explain that these interactive tools facilitate a democratic learning environment where users are able to influence what is learned and how it is learned. Nonetheless, Web sites should be seen as tools to enhance communication, not as tools to replace existing forms of communication (Bull et al., 1998; Boettcher & Schwartz, 1998).

Convenient. The rapid growth in computer technology means that "just like fax machines and cell phones, the Internet has quickly become part of everyday life" (Ministry of Industry, 1998). Information is available "at the click of a mouse" (Industry Canada, 1998) from any computer connected to the World Wide Web (Crumlish, 1998). Web users have increased flexibility in terms of device, distance and time (Khan, 1997). However, factors such as file size, transfer speed and lack of technical support may reduce the efficiency of Web-based delivery (Khan, 1997), and the rate of adoption (Rogers, 1995).

Time effective. As more institutions become "networked," more educators are able to share materials, feedback and resources. Consequently, the Web becomes a mechanism for saving time (Moursund, 1998).

Cost effective. Web-based course delivery can also be cost effective (Khan, 1997). However, start-up costs for computer equipment, software and connectivity may prohibit some people from using Web-based course delivery (Khan, 1997). Likewise, Rossner and Stockley (1997) warn that this type of course delivery is costly given the initial expenses "to build the infrastructure and support systems needed to accommodate Web-based instruction" (p. 334).

Summary of the Literature

The Collaborative Schools Web site reflects the current reality of education. Recent government policies and educational initiatives place an importance on technology integration. Results from technology surveys indicate an increase in the amount of technology use and access at the school and University levels. It was also found that

information can be obtained from a Web site in a time-effective fashion. Literature related to these ideas is used to address the remaining research questions.

Communication within an organization is influenced by three key factors: the type of organization, the quantity of information and the form in which the information is transmitted. Recent advances in technology have led to the creation of virtual organizations, by enabling more people to work in temporally and spatially dispersed environments. This has led to changes in organizational structure and culture. Since many people are no longer restricted to a physical office space, they do not share the same of ways of identifying with their organization. Moreover, it becomes more challenging for managers to ensure that key information is being communicated consistently. In a highly turbulent environment, such as that of a virtual setting, there is greater potential for uncertainty and ambiguity of information. A variety of Media Choice Theories explain how people can use a medium or a type of social interaction to build shared understandings.

There are many factors that need to be considered when developing a Web site. Of primary importance is the potential user of the Web site. A needs assessment is an effective way of involving the user in the development process. Data should be collected to determine the user's needs, level of experience and Web-based environment. Results from usability tests show that users lose confidence in a Web site when they are unable to find information or wait too long for a page or graphic to download. Therefore graphics and text should be used sparingly to reduce download time. The content should be succinct and organized in such a way that the user can scan and retrieve the information quickly. Information and navigational features within the site should be consistent, organized and easy to use. Furthermore, continuous feedback should be provided to the user, explaining why a feature does not work and where to obtain assistance.

The usefulness of a system can be characterized in terms of its usability and its "utility." Usable systems are (a) easy to learn, (b) efficient to use, (c) easy to remember, (d) free of error and (e) pleasant to use. Web-based communication offers several benefits for potential users in that it is interactive, convenient, cost effective and time effective.

Chapter III: Method

In this chapter, the method used to answer the research questions will be discussed. First, I explain the research design used for this investigation. Next, I describe the methodology in selecting the sample and in collecting and analyzing the data. Third, I present the strategies for addressing trustworthiness, which were considered in order to enhance the credibility and the dependability of the study. Lastly, I clarify the ethical considerations for this study.

Research Design

The intent of this study is to explore how a Web site can enhance communication among participants in the Collaborative Schools Initiative. Since Web sites have a relatively short history, compared to other mediums of communication, little is known about what impact they have on communication among people in different organizations. Strauss and Corbin (1990) suggest that when little is known about a phenomenon and the intent of the research is to gain insight into the phenomenon under study, the choice of research method should be a qualitative one. In this case, it is appropriate to use a qualitative method supported by the interpretivist paradigm in order to portray a context which is "socially constructed, complex and ever changing" (Glesne & Peshkin, 1992, p. 6). Interpretivist techniques provide researchers with an opportunity to interact with participants in order to understand people's "lived experiences" (Berg, 1998). For interpretations to be made, researchers must gain access to the multiple perspectives of the participants (Glesne & Peshkin, 1992, p. 6). As interpretivists collect data they will often discover conflicting meanings and interpretations. Therefore, Denzin (1988) believes it is an interpretivist's role to capture the core of these meanings and contradictions (p. 18).

In this study, I have captured the experiences, opinions and attitudes of the participants. Through interviews, surveys, anecdotal notes and personal communications, a concise description of the key findings has evolved. The "constant comparative method," a technique developed by Glaser and Strauss (1967), enabled me to generate theories and merge findings by performing data collection and analysis simultaneously. Theories were grounded through the process of discovering concepts in the data, developing hypothesis and continually testing these against new data (Glesne & Peshkin, 1992). Hence, through

the discovery, development and verification of data which was systematically collected and analyzed, I have provided the reader with a written illustration of the researcher's interaction with participants.

Sample

The sample consisted of 15 participants: 12 at the school level and 3 at the University level. Participants at the school level included cooperating teachers, student teachers and school coordinators from two Junior High schools participating in the Collaborative Schools Initiative. Participants at the University level included representatives from the Division of Field Experiences. All sampling was done with a purpose in mind: to determine whether a Web site could provide information and facilitate communication between participants in the Collaborative Schools Initiative. Lincoln and Guba (1985) refer to this non-random technique as "purposive sampling." I chose participants who were actively involved in Field Experience programs and who were able to provide reliable data as to whether or not the Web site met its intended purpose. I believed that each participant would play a significant role in providing an answer to the research question. The participants I selected were either colleagues with whom I was working at the University, or people that I had encountered through my experience as a facilitator at the two schools. Given that this was an ethnographic study, entering the field as a "known" researcher has several benefits (Berg, 1998, p. 125), one of which was that I had already gained considerable rapport with many of the participants. However, the methods used to select, gain access to and collect data from participants at the University level and at the school level differed in some respects. In the next section I will explain how these were addressed.

School level

In mid-January 1999, at a meeting of University facilitators involved in the Introductory Professional Term (IPT), I received a list of the schools where I would be working with student teachers. Fortunately, two out of the three schools where I was assigned were secondary Collaborative Schools within the Edmonton Public School District. As a result, these schools naturally fit the criteria for involvement in my study. When contacting the principals, I explained that in addition to being the University's representative and liaison, I was seeking consent to conduct research at their school.

Approval was granted in each case and within two weeks the IPT program started at schools. The student teachers and I arrived for the first of three Fridays of observations. After completing observations, they were then required to complete four weeks of student teaching. As a researcher, I had a dilemma: Should I approach potential participants right away, or should I establish rapport? Although the University had granted me permission to contact student teachers about my study, I was still not able to share this information with other personnel at the school, pending approval of my research by the school district. Therefore I decided to spend the first Friday morning solely in my role as the University facilitator. This time proved to be a valuable investment. I met the staff and began to understand the culture and routine of both schools. The rapport building became important as my study evolved.

It was during the second Friday that I approached student teachers about my research. I explained that they would not be penalized if they chose not participate and that they had the right to withdraw from participating at any time. All student teachers expressed interest in the research. Each student teacher was then provided with a letter (Appendix D), a consent form (Appendix E), Web site access instructions (Appendix F) and two surveys (Appendixes G and H). A week later, upon approval of the study by the school district, I contacted the principals again. This time, they were e-mailed copies of the letter, the research proposal and the consent form. Shortly thereafter, I was granted authorization to approach individual staff members by the principals at each school. Initial contact with staff was completed through electronic mail or in person. A follow-up conversation involving the distribution of the research package (Appendixes D to H) was initiated in each case. Subsequently, student teachers and school staff were given a deadline for the submission of surveys and consent forms. All forms were collected upon future visits to the schools.

During the final week of the Field Experience, I conducted the interviews. Of the 12 participants at the school level who completed the surveys, 4 participated in the interview phase of the research. In order to conduct the focus group interviews, I selected two participants from one school and three participants from the other school, all of whom had volunteered for the focus group. Although I had anticipated that the focus group would involve the school coordinator, a cooperating teacher and a student teacher, in both cases,

the school coordinator was unable to attend the interview.

University Level

While collecting data from the schools, I also approached select staff from the Division of Field Experiences and offered them an opportunity to actively participate in my research. I approached those staff members with whom I had previously established rapport, through my work as a school coordinator and University facilitator in the Collaborative Schools Initiative. These people were selected based on their knowledge of the Collaborative Schools Initiative and their active involvement in this venture. Prior to conducting the research, all participants were made aware of the Web site. They were contacted individually by electronic mail and in person. Consent forms and surveys were completed and returned via campus mail. Given time constraints, I was aware that Field Experience personnel would be challenged to find an opportunity to participate in a focus interview. Therefore, I asked these participants to respond solely to the surveys.

As shown in Table 4, the sample in the study reflects a cross-section of people in various roles in Field Experience programs.

Table 4

Participants in the Study

Role in field experience	n	Location		
		School A	School B	University
Student teachers	6	2	4	0
School staff	6	3	3	0
Field Experience staff	3	0	0	3
Total	15	5	7	3

Data Collection

As in all qualitative studies, the researcher becomes the "main research instrument as he observes, asks questions and interacts with research participants" (Glesne & Peshkin, p. 6). Therefore it was important to obtain my information in a variety of ways. I used two surveys and a semi-structured interview process to reflect upon the principal research

question, "how can a Web site provide information and enhance communication amongst participants of the Collaborative School Initiative?" To record my thoughts, I also kept a logbook. In this last part of this section, I will describe each method of data collection.

Surveys

In commencing the study, I wanted to understand the background of each participant in terms of his or her (a) technological background and (b) Field Experience background. A first survey was used to obtain this information. A variety of questioning formats was employed. To seek general opinions about technology and Field Experiences, a five point "Likert scale" was used. To determine participants' access to technology and their experience with technology, multiple choice questions were used. However, for some of these questions, participants were asked to give a specific value (e.g. number of years). Intervals were then created to accommodate all data. Various spaces were placed throughout the survey to provide respondents with the opportunity to expand on their answers.

After completing the background information survey, participants were then given two to three weeks to evaluate the Web site. A second survey was used to solicit information pertaining to the Web site. Two questioning formats were employed. The majority of the questions were Likert type questions. Three questions, however, asked participants to write answers in paragraph form.

Interviews

Upon completion of the two surveys, interviews were conducted with those cooperating teachers and student teachers that had placed their name in a volunteer pool. Although interviews were semi-structured and varied considerably from one to another, an interview schedule was used to maintain a certain degree of consistency between them (Appendix I). Interviews lasted twenty to forty minutes. In total, three interviews were conducted - one focus group and two individual interviews. A computer, with access to the Internet, was located in the room during the time of the interviews. There was one main reason for this. Participants would have access to the Web site for reference purposes: it was thought that having access to the site might assist participants in describing a particular feature or element of the Web site. However, in one of the three interviews, a computer

with on-line access was not readily available.

It became apparent during the study that a variety of factors contributed to slight alterations in what I had initially intended to do. These factors included the time lines of participants, administrative priorities and unscheduled absences. At school A (Acorn School), the coordinator was not ready for the first scheduled interview. Moreover, the cooperating teacher was unexpectedly absent during this time. As the student teacher was to complete her Field Experience during the week that the initial interview was scheduled, I elected to conduct the interview with her and complete the rest of the interviews the following week. Unfortunately, the school coordinator was, unexpectedly, not available during the second scheduled interview as well. As a result, I was only able to interview the cooperating teacher. At school B (Blackdale School), the school coordinator chose not to participate in the study, citing administrative responsibilities. However, a cooperating teacher and her student teacher chose to participate in a focus group interview. I was able to interview both participants at the same time.

The intents of the interview were to develop rapport with the participants, discuss the research topic and uncover salient information about the research question. Questions in the interview process were structured to permit flexibility and a wide range of responses. It should be noted that interview schedules were not forwarded to participants in advance of the interviews. This was due to two reasons. First, I wanted to allow participants ample time to complete the two surveys without further distractions concerning the research. Second, given that the study occurred during reporting time, I knew that participants would likely not have much time to prepare for an interview. However, in order to provide participants with transition time and an opportunity to mentally switch roles from 'teacher' to 'interviewee,' I asked each person to spend a few minutes recording their thoughts on a form that I prepared about the Web site (Appendix J). To establish guidelines for participating in focus groups, a procedure documents (Appendix K) was distributed to participants. Shortly after the completion of each interview, I verified that the audio taped recording was audible and complete. Upon having all recordings transcribed verbatim, I checked each transcript with the audio taped interview for accuracy. All interview comments used for quotations, as well as explanations of the context, in which they were

made, were sent to the participants to clarify, enhance and validate the data. Participants were asked to make corrections and to return the revised version in a self-addressed envelope, which was included with the information provided.

Researcher Logbook

A logbook was kept during the data collection phase, in order to record ethnographic data such as personal observations and descriptions of incidents. Notes were kept in a logbook and later transcribed to a computer database, where they were organized chronologically. This process provided me with an opportunity to record events, conversations and ideas. It also became a place where I was able to explore my personal biases (Glesne & Peshkin, 1992, p. 45). Lincoln and Guba (1985) suggest that by using a research logbook, the interviewer does not need to rely solely on his memory in order to compose a summary of the interview (p. 272). Likewise, I found these notes particularly helpful during data analysis. The logbook enabled me to record incidents which I may have otherwise overlooked or forgotten.

Data Analysis

The data analysis involved several steps. Initially, I transcribed each interview into print form and numbered each line and page of the transcripts. To maintain confidentiality, I used pseudonyms to conceal the identity of people or schools involved in the study and also created a personal code to simplify reference and storage purposes. The first letter is indicative of the school (Acorn or Blackdale) or University (U). The second letter indicates whether the participant is a student teacher (S), a cooperating teacher (T), a school coordinator (C), or Field Experience staff member (F). The numeric code specifies the numeral given to differentiate between each participant. For example, 'A-T3' indicates that the participant is the cooperating teacher number 'three' at Acorn school. All data on computer disk, cassettes and paper were dated and labelled using the same code. These codes facilitated referencing throughout the process of organizing the interview data according to themes and categories.

Data analysis initially posed a challenge, as data from the surveys were both quantitative and qualitative. Moreover, the data from the interviews and the logbook were qualitative. Researchers such as Lincoln and Guba (1985) perceive that the two methods

(quantitative and qualitative) conflict, given the differences in the philosophical nature of each paradigm. However, other researchers see a variety of approaches as useful: each approach allows the researcher to understand things in different ways (Glesne and Peshkin, p. 9). To alleviate the challenge of working with both qualitative and quantitative data, I recorded the responses from both surveys in a database. By using this database to record the survey data, I was able to organize, sort and compile the quantitative data into a variety of tables. Qualitative data were also organized according to the survey questions and printed in columnar form. The organized survey data were then merged with data from interviews and the logbook.

The methods for data analysis used in this study are based primarily on the "grounded theory approach" (Rudestam & Newton, 1992), where "data are systematically coded into as many themes and categories as possible. As the categories emerge and are refined, the researcher begins to consider how they relate to one another and what the theoretical implications are" (p. 36). This is a cyclical process: the researcher focuses on exploring areas revealed by ongoing analysis and emerging issues. These stages led me to use a combination of both deductive and inductive techniques in order to categorize all of the data for more in-depth analysis.

In developing the categories for data analysis, I grouped the data according to the five research questions: (a) Can a Web site provide timely information to participants in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are required to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants provide in relation to the Web site prototype? Before beginning the analysis, I created a color-coded key for each category. Highlighter markers were used to group interview data into categories according to different colors. Upon highlighting those elements, which were physically present and countable, I discovered that all the data fit into predetermined categories. Berg (1995) refers to this process as "manifest content analysis" (pp. 225 - 226). However, through this process, I discovered that data needed to be further organized into sub-categories. To do this, I looked for a minimum of three independent examples of an emerging idea and created a new sub-category. From

these sub-categories emerged finer groups of data.

Trustworthiness

In this study, trustworthiness is a general term concerned with the degree to which data are grounded in the reality of the participants. Two criteria were used to assess the trustworthiness of the findings: credibility and dependability.

Credibility

Credibility is considered essential for assessing the trustworthiness of qualitative research (Lincoln & Guba, 1985). In naturalistic inquiry, credibility is achieved through a process called "structural corroboration," where a variety of measures are taken to control factors which may threaten the validity of the findings (Rudestam & Newton, 1992, pp. 38-39). What follows is a description of the measures that were employed.

Member checking. Member checking refers to the process of verifying interpretations of data with participants to validate findings (Lincoln & Guba, 1985). Upon completing data analysis, quotations were described in context and sent to participants. Feedback was encouraged to ensure accurate interpretations of content.

Triangulation. This method of data verification required on-going hypothesizing, comparing and contrasting data sources (survey data, notes, interview transcripts, documents), clarifying findings with participants and verifying results with an objective source (Guba & Lincoln, 1981). Threats to the validity of the study were further reduced, by comparing the findings with other sources of data (logbook, surveys, interviews and personal communications).

Selection of participants. Participants were selected based on their role in Field Experience programs. Consequently each participant entered the study with a different amount of knowledge of these programs. Furthermore, participants entered the study with different technological backgrounds. Such random heterogeneity increased the credibility of the research findings, as a variety of participants led to a variety of perspectives.

Instrumentation. The surveys and the interview schedule that were used to obtain data also contributed to the credibility of the findings. Survey questions had been tested during the developmental phase of my study and necessary modifications were made.

Because the research questions were addressed through semi-structured interviews with each participant, interview questions were grounded in the central focus of the research problem (Rudestam & Newton, 1992).

Dependability

Dependability refers to the accuracy of research, or the consistency of the findings. According to Rudestam and Newton (1992), consistency can be achieved by the researcher through coding the raw data in such a way that it is understood by another person, who, in turn, is able to arrive at similar conclusions (p. 38). This is why categories and themes, as determined through coding of the data, were shared with an objective source to verify inter-rater agreement (Lincoln & Guba, 1985). Upon completing data analysis, findings were shared with participants to ensure accurate interpretations of content. All referential materials and data have been retained to allow for dependability audits.

Although there is no single technique that can fully guarantee the credibility and the dependability of data, techniques used to enhance trustworthiness depend upon the nature of the research problem and the rigour of the researcher.

Ethical Considerations

In the introductory letter to participants, the risks, benefits and expectations for participating in the study were fully explained. It was also explained that, given the nature of the study, anonymity was not possible. Although confidentiality for individual participants in the survey process was ensured, the use of a group interview process did not permit confidentiality to individual participants in the study. However, it was explained that the confidentiality of the group of participants and of the schools would be preserved. Glesne and Peshkin (1992) warn that when conducting research in the workplace, "dangerous knowledge" can result in "ethical and political dilemmas" (p. 23). Therefore, during the interviews, participants were informed of their right not to respond to anything with which they were not comfortable. Furthermore, throughout the study, each participant was encouraged to ask questions or share concerns.

It was explained on several occasions that participants had the right to opt out of the study at any time. Upon expressing verbal interest, participants were given surveys, consent forms and security instructions (username and password) to access the Web site.

Written consent was obtained upon remittance of the surveys. Given the extra time commitment for the interview phase of my study, I made no attempt to persuade any participant to volunteer for the focus group interviews. On several occasions, personal contact with participants was done through conversations and e-mail messages. Participants were also given several opportunities to communicate with me. Contact information was provided in the introductory letter, on each of the surveys, upon completion of the interview and upon verification of the research findings.

In recording the findings, referencing of the participants was facilitated through the use of the code, as described in the previous selection, as well as through the use of pseudonyms. To ensure accurate referencing of participants, a key was created and updated as needed. This was kept in a secure place.

Despite all these precautions, I found my role as a researcher was in an ongoing position of potential conflict with my role as a University facilitator. In turn, these roles could potentially conflict with my role as Web site designer. Participating in such a variety of roles gave me the opportunity to be actively involved in my research. For these reasons, I considered myself to be in the category of "participant as observer" (Glesne & Peshkin, 1992, p. 40). Glesne and Peshkin (1992) refer to this as "participatory research." The researcher's role often becomes that of a facilitator who works collaboratively with participants, although the forms and extent of the collaboration may vary (p. 9). I discovered that my various roles, although somewhat interdependent, at different times during the study, needed to be reestablished. It was important that my role at the school level, which was that of University facilitator, was of utmost priority. I was aware of ethical issues related to my supervisory role of student teachers. I assured the student teachers on several occasions that participation in the study was completely unrelated to their performance in the IPT. In other words, their refusal or willingness to participate would not impact their mid-point or final evaluations (negatively or positively). In communicating with the student teachers, cooperating teachers and school coordinators, I made sure to always discuss the progress of the Field Experience prior to talking with them about my study. Consequently, I had to take care not to influence data due to personal bias. In conducting interviews, care was taken not to skew the data through questions or

comments which may have altered answers, or inferred that one answer was preferable to another. From the perspective of the Web site developer, care has been taken to maintain the integrity of the Web site prototype. Therefore, no modifications have been made since the first week of the study (March 1 - 5, 1999).

Summary

Little empirical evidence has been gathered about the impact that Web sites have on enhancing communication between institutions. However, theories were generated from an interpretivist perspective and tested, as the data emerged. In order to enhance the credibility and dependability of the study, strategies for addressing trustworthiness were considered and actions were taken to reduce error. The findings of this study were grounded in the experiences and reality of the participants and, therefore, cannot be generalized to other settings. However, sufficient detail about the study was provided so that the reader may assess the degree to which the findings can be transferred to other contexts.

Chapter IV: Findings

In this chapter, I present the results of the data analysis. In order to better understand how a Web site can facilitate communication to participants of Field Experience programs, I explored the perspectives of school staff, University staff and student teachers.

The process of data analysis uncovered a number of categories and themes related to the research problem. The findings are presented according to the five research questions: (a) Can a Web site provide timely information to participants in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are required to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants have in relation to the Web site prototype? To provide a context for the findings, a general overview of the Web site is presented along with demographical information about the participants.

Overview of the Web Site

Homepage

The homepage is the first page that users see upon accessing the Collaborative Schools Web site (Appendix L). The purpose of this page is twofold. First, it welcomes users to the site. Second, it acts as a transition point to other pages or sites. The homepage displays six icons with captions. Users are linked to a particular area when the icon or underlying text is appropriately selected. To facilitate questions or comments about the site, an electronic mail link appears at the bottom of the screen.

Overview of the Collaborative Schools Initiative

This section contains an introduction to the Collaborative Schools Initiative (Appendix M). Users are presented with four options: (a) frequently asked questions, (b) a list of Collaborative Schools, (c) information about school coordinators, (d) the Collaborative Chronicles newsletter.

IPT Handbook

The electronic version of the handbook contains links to Field Experiences personnel, links to school Web sites and links to the Alberta Teachers' Association Web

site (Appendix N). To make information visually appealing, I highlighted key words and created bullet lists. While the format of the electronic handbook differs from the paper version, the information is consistent.

Calendar

The calendar is an integral feature of the Web site (Appendix O). Created with WebCT courseware on a secure server, the calendar acts as a visual reminder for important dates such as school visitations or deadlines for practicum evaluations. Hyperlinks to related areas (e.g. the IPT handbook, the ATA Web site) are also provided on the calendar.

Site Map

The site map is found on a single Web page and contains major links to all areas on the Web site (Appendix P). Links are organized according to the six categories found on the homepage.

Templates and Forms

Three downloadable files, available in both Windows and Macintosh formats, are provided on a Web page (Appendix Q): (a) a notification of concern form (Appendix R), (b) a self-evaluation form (Appendix S) and (c) a copy of the final evaluation template (Appendix T). A notification of concern form is required if a student teacher is experiencing considerable difficulty during a practicum. This form must be completed by a cooperating teacher or by a University Facilitator and submitted to Field Experiences. As it is customary for student teachers to complete a self-evaluation at the midpoint of the Introductory Professional Term, a copy of a self-evaluation form is also provided. Finally, to furnish student teachers and cooperating teachers with criteria for the final evaluation, an evaluation template is provided.

Demographical Information

Participants were asked to provide demographical information (Table 5). Student teachers formed the youngest group, averaging 23.3 years. The average ages of school and Field Experience staff participants amounted to 35.8 and 51.0 years respectively. Given that student teachers had limited classroom experience, they were not asked to provide information relating to their number of years teaching.

Table 5

Average Age and Experience of Participants, According to Field Experience Role

Field experience role	n	Years		
		Age	Field experience	Teaching
Student teachers	6	23.3		
School staff	6	35.8	4.8	8.0
Field Experience staff	3	51.0	19.0	28.0
Total	15	33.9	9.6	14.7

Can a Web Site Provide Timely Information to Participants Involved in Field Experience Programs?

The Web site provides "timely information" to participants in several ways: (a) it meets an identified need, (b) it supports educational change and (c) it provides a time effective means for accessing information. In the context of this study, timely information refers to information that is suited to a particular need and supports current practices in education.

Meets an Identified Need

Participants were asked questions about the amount of support and communication they witnessed in Field Experience programs. Table 6 and Appendix U present a summary of their responses. Table 6 presents the total of responses from all participants. Appendix U presents responses from student teachers (Table U1), school staff (Table U2) and Field Experiences staff (Table U3).

Participants agreed that there is a need to enhance communication between personnel at the University and in schools. Although this need was clearly expressed by student teachers and school personnel, staff from Field Experiences expressed particularly strong feelings about this issue. Similarly, participants acknowledged the need for information to be diffused more effectively between personnel at the University and in schools. Approximately half of the participants felt there was an adequate amount of

support for people involved in Field Experience programs. Two participants--a student teacher and a representative from the Division of Field Experiences--expressed that there was not enough support provided to people in schools. While some participants considered themselves to be well informed, others did not. Although Field Experiences staff appeared to have a clear understanding of the CSI, many student teachers and school staff did not. However, with the exception of one student teacher, all participants noted that they had a clear understanding of their role in Field Experiences.

Table 6

Responses Relating to Field Experience Programs: Summary (N = 15)

	Attitude scale				
Statement	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
1. There is a need to enhance communication between the University and schools.	0	0	1	9	5
2. There is a need to diffuse information more effectively between the University and schools.	0	0	2	8	5
3. There is lack of support for participants involved in the Field Experience program.	0	7	6	2	0
4. I have a clear understanding of the Collaborative Schools Initiative.	2	2	4	4	3
5. I have a clear understanding of my role in the Field Experience.	1	0	0	9	5

Overall, the responses provided by staff in the Division of Field Experiences reveal

a higher degree of consistency than those provided by student teachers and school staff. Field Experiences staff felt they had a clear understanding of the Collaborative Schools Initiative and their roles and responsibilities. On the other hand, responses from student teachers and school staff indicate that their understandings of Field Experiences varied to a great degree.

Supports Educational Change

Several participants noted that revised regulations and policy amendments in Alberta have encouraged educators to increase their use of technology in the classroom. One cooperating teacher, Mary, viewed the Web site as a tool for information management. She stated: "In the climate of education today, teachers feel overwhelmed with the flurry of paper . . . " She acknowledged that a CSI Web site would complement the trend towards increased technology integration in education. Another cooperating teacher, Connie, noted that changes to provincial programs of study have resulted in educators updating and enhancing their knowledge and skills of computers. She referred to the growing use of computer technology in schools and stated:

> Technology as a communications tool is the expectation in schools . . . that's the way our world is going. We're in a school right now that is very focused on technology. The elementary school I came from had an enormous amount of technology as well. It is a requirement. We have a curriculum for it . . . so it's important that we use it.

Connie added that computer technology skills are essential for teachers today given the current context in education.

Attitudes towards technology. Participants' responses reflected a favourable attitude towards technology (Table 7). There was a general consensus that computer technology can enhance communication to participants in Field Experience programs. Most participants felt that using computer technology did not waste their time and noted that all teachers should have access to a computer. A small number of people ($n = 4$) felt that personal computers are not essential. Most participants ($n = 14$) felt that access to a computer is essential for teachers.

Table 7

Responses Relating to Technology: Summary (N = 15)

Statement	Attitude scale				
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
1. Access to a computer is essential for teachers.	0	0	1	0	14
2. It is essential that teachers own their own personal computer.	0	2	2	7	4
3. Computer technology can enhance communication.	0	0	0	9	6
4. Using computer technology is a waste of time.	8	5	2	0	0

Computer access. Participants strongly agreed that access to a computer is essential for teachers (Table 8). All participants had access to a computer at work and all participants, with the exception of one student teacher, had access to a computer at home. With the exception of two student teachers, all participants had access to the Internet from both home and school.

Table 8

Access to Computers and Internet at Work and at Home, According to Field Experience Role

Field experience role	n	Computer access		Internet access	
		School	Home	School	Home
Student teachers	6	6	5	5	4
School staff	6	6	6	6	6
Field Experience staff	3	3	3	3	3
Total	15	15	14	14	13

With regards to the location of the closest computer at work, most school and Field Experiences staff had access to a computer directly from their desk (Table 9).

Table 9

Location of Closest Accessible Computer at Work, According to Field Experience Role

		Location of work computer			
Field experience role	n	Desk	Classroom	Staff room	Computer lab
Student teachers	6	3	2	0	1
School staff	6	5	1	0	0
Field Experience staff	3	2	0	1	0
Total	15	10	3	1	1

Computer use. A large number of participants (n = 9) used computers both at work and at home (Table 10). Six school staff members are included in this group. Half of the student teachers (n = 3) indicated that they most often used the computer at home. Staff from Field Experiences (n = 3) were represented in each of the three categories ("work," "home," "both").

Table 10

Where the Computer is Most Often Used, According to Field Experience Role

		Location of computer use		
Field experience role	n	Work	Home	Both
Student teachers	6	1	3	2
School staff	6	0	0	6
Field Experience staff	3	1	1	1
Total	15	2	4	9

Findings relating to the number of years of computer experience are presented in Table 11. Each student teacher had less than five years of experience using a computer. In contrast, school and Field Experiences staff had a minimum of five years of experience using a computer. The computer experience of Field Experiences staff ranged in time from 10 years to 20 years while the computer experience of school staff ranged from 5 years to

15 years. The experience of student teachers varied from 0.5 years to 4 years.

Table 11

Computer Experience Prior to Study, According to Field Experience Role

		Years of computer experience				
Field experience role	n	Less than 1 year	1 to 1.9 years	2 to 2.9 years	3 to 4.9 years	5 years or over
Student teachers	6	1	0	2	3	0
School staff	6	0	0	0	0	6
Field Experience staff	3	0	0	0	0	3
Total	15	1	0	2	3	9

According to Table 12, twelve participants used the computer for a minimum of one hour every day. Two student teachers indicated less than one hour of computer use per day. Of the total numbers of respondents (n = 14), five people said that they used the computer for more than two hours a day.

Table 12

Daily Computer Usage Prior to Study, According to Field Experience Role

		Hours of daily computer usage				
Field experience role	n	Less than 0.5 hours	0.5 - 0.9 hours	1 - 1.9 hours	2 - 2.9 hours	Over 3 hours
Student teachers	5	1	1	2	0	1
School staff	6	0	0	3	2	1
Field Experience staff	3	0	0	2	0	1
Total	14	1	1	7	2	3

Time Effectiveness

Participants revealed that using a Web site to obtain information about Field Experience programs saved time. One student teacher, Janice, felt "it was a quick way to check things out," while another cooperating teacher, Mary, liked that she could bookmark

the Web site address for quick reference. A comment was made pertaining to the usefulness of a Web site given "the hectic schedule of a teacher." Mary noted that using a Web site might reduce the amount of time she spent on the phone waiting for necessary information.

Summary

These findings outline ways in which the Collaborative Schools Web site can provide timely information to participants. Although participants from the Division of Field Experiences felt that they have a clear understanding of the Collaborative Schools Initiative and of their personal roles and responsibilities, many student teachers and school staff do not. Participants also suggested that the Web site supports current trends in education. Various factors contribute to this: participants' access to computers, attitudes towards technology and government policies that require teachers to integrate computer technology into their classroom practices and professional development. Participants also indicated that by using the site, it was easy to access information and therefore saved time for the user.

In the next section, I describe the findings in relation to the potential of the Web site to consistently communicate information to its users.

Can a Web Site Consistently Communicate Information to Participants in Field Experience Programs?

In determining whether a Web site can consistently communicate information to its users, two main factors must be considered: (a) information management and (b) standards.

Information Management

Managing information within Field Experience programs is dependent upon three factors in particular: (a) the large numbers of people involved, (b) the large quantity of information that must be communicated and (c) how information is transmitted from one source to another.

Large numbers of people involved. Collaborative Schools generally welcome a large number of student teachers on an ongoing basis. These student teachers come from a variety of programs, ranging from five half days of observation (EDFX 200) to nine weeks of Field Experiences (APT). At Acorn School, Mary, a cooperating teacher, estimated that

40 to 50 student teachers had visited the school during the 1998 - 1999 academic year. She said that the majority of these student teachers were enrolled in the observation component of their education program.

Participants shared ways in which they were involved in Field Experience programs. Their perceptions of roles and responsibilities varied considerably from one person to the next. Connie noted that she was surprised with the range of evaluation practices used by others. She commented that one of her student teachers had been asked by a University facilitator to write her own final evaluation. The student teacher was in the Advanced Professional Term (APT) and the final evaluation indicated whether or not the student teacher was prepared to join the profession.

Student teachers at both schools worked under the guidance of one supervisor--their cooperating teacher--although some student teachers worked informally with others on staff. John, a student teacher at Acorn school, was the exception. Mary, his cooperating teacher, described his Field Experience as a shared arrangement between herself and another teacher on staff. Given conflicts in schedules, John spent more time in Mary's class.

Another student teacher, Bruce, described his experiences before arriving at Blackdale school. Although he reviewed the IPT handbook prior to his Field Experience, he was unsure about his roles and responsibilities when he first arrived at the school. When asked if somebody had communicated these expectations to him before the Field Experience began, he stated: "In our EDPS 310 course, we went through the whole field book in approximately 20 minutes." Although the purchase of an IPT handbook is expected of student teachers, it is ultimately the responsibility of each individual to do so. It is also expected that student teachers will familiarize themselves with the contents of the handbooks. Bruce admitted that he did not purchase a copy of the handbook.

Large quantity of information. There is a large quantity of information that needs to be communicated from the Division of Field Experiences to people working in schools.Two areas emerged as contributing to the quantity of this information: (a) handbooks and (b) written communication in the form of letters and notes. In an effort to reduce the amount of paper provided to schools, the Division of Field Experiences

provided all cooperating teachers with an eight-page summary of the IPT program. This was done at the beginning of the 1998-99 academic year. Furthermore, two IPT handbooks were provided to each school. It was suggested that one handbook be specifically designated for the school coordinator while the other be kept in a place accessible to all cooperating teachers (e.g. a staff room or department lounge). Additional handbooks were provided to individuals on an "as needed" basis.

Two student teachers, Janice and Bruce, said that they were expected to purchase their own IPT handbook for three dollars from the bookstore. Bruce, however, explained that he borrowed the handbook from a friend. After using the Web site, he commented that it would save students money since the information was provided "free of charge." Upon learning that student teachers were required to buy their handbooks, Connie, a cooperating teacher at Blackdale school, stated that she had several extra copies that she would be willing to share.

Several comments pertained to the amount of paper that schools receive from outside sources (advertising agencies, fundraising groups, community organizations). In addition to the daily mail, Mary also received notes from the school coordinator informing her of dates for items such as visitations and evaluation periods. Mary felt that a Web site would be helpful in terms of managing information:

> We have a flurry of paper coming through our mail boxes all the time and I'm constantly asking myself, "where did I lay that down?" With a Web site you can simply print something when you need it . . . I would rather just go into a Web site and read.

Mary explained that what she most appreciated about the Web site was its immediacy:

> It's immediate . . . and you can't lose it, like with paper. I have so many binders in my room . . . but for this, I can just go in there any time I want, have a look and decide what I need to do.

Mary felt that the quantity of information on the Web site was sufficient. However, she noted that with more experience, she might think otherwise.

Method of information transmission. As demonstrated in Figure 1, the Division of Field Experiences spans several organizations--schools, school divisions, colleges and the

University. Each organization has its own hierarchical structure and varies in complexity. The structure in a school setting tends to be less formal than that of a University. Some participants expressed frustration when trying to access information from the University. Mary talked of feeling isolated in her classroom and explained that, sometimes, she did not know where to get the information she needed. She also described feelings of frustration as a result of her lack of availability. For a large part of the day, Mary is teaching and unavailable for phone calls. She commented:

> I first of all don't really know whom to phone. However, if I phone, I probably have to be transferred to 6 different places until I finally get someone--who is usually a secretary--who takes a message. When the person phones me back, I'm teaching a class. So this Web site is much easier.

A student teacher, Janet, explained that the Web site provided her with another means to access information rather than relying on her cooperating teacher or her handbook. Janet stated the following:

> I knew the expectations because I have the handbooks and I've been prepped. But if the co-operating teacher was a little bit unsure and didn't have the paper that I had, the Web site would be helpful.

Cooperating teachers reported to have had no direct contact with University personnel other than with a facilitator. At Acorn school, Mary explained that all information from the University came through the school coordinator. She described her school coordinator, Denise, as "well informed." She stated: "Denise is good at keeping us apprised of situations . . . she e-mails information to us . . . like who's coming and when." Mary remarked, however, that it becomes a challenge if the coordinator does not keep everyone informed. Comments from Janice, a student teacher at Acorn school, revealed that she viewed circumstances from a different perspective. When student teachers arrived at the school for the observational stage of their Field Experience, Janice felt that Denise was taken by surprise. She remarked: "The school coordinator . . . didn't know we were coming. For the first two days, she didn't have anything planned for us. She was just confused to see us there." In addition to coordinating student teaching placements at the school, Denise supervised a student teacher herself.

Five participants--two cooperating teachers and three student teachers--commented that the presence of effective coordinators facilitated their access to information. However, they also noted that the Web site could provide 24 hour access to information. Janice noted: "If one was unsure [about Field Experience procedures] and didn't have the handbook, the Web site would be an easy way to look something up."

A final issue pertains to whether information on the Web site should be made accessible to the general public. Janice, a student teacher, felt that the Web site should be accessible to everybody, not just to participants in Field Experience programs. She felt that a secure Web site was a hindrance because it needed to be accessed by a great number of people.

Standards

Participants better understood their role and the expectations of the Field Experience program when this information was reinforced through the Web site. Two observations emerged in terms of reinforcing standards: (a) the Web site clarifies roles and responsibilities in Field Experience programs and (b) the Web site enhances understandings and expectations about Field Experience programs.

Clarifies roles and responsibilities. Participants who were new or inexperienced with the operations of Field Experiences indicated that the Web site helped to clarify their role. Mary, a first-time cooperating teacher, described the Web site as "a tool for clarifying the collaborative model." Bruce, a student teacher, originally thought he was expected to be teaching up to 50 percent of the time by the end of the Field Experience. It was through using the Web site that he discovered he had other responsibilities as well. Upon reviewing the Web site herself, Bruce's cooperating teacher, Connie, discovered that her expectations may have been a little too high. She stated:

> I've been working with student teachers for 12 years . . . because I think I can help them to become good teachers. However . . . until I read the information on the site, I really hadn't known what my responsibility was. I probably gave the student teacher more control in the classroom than I should have . . . In a sense, the site has helped me really understand what the goals of the students are and what they need to know by the end of this round.

Although the information on the Web site is the same information that is found in the handbook, Connie is a testament to the need to clarify the roles and responsibilities of participants in Field Experiences.

Mary regretted not reading the expectations for student teachers prior to the Introductory Professional Term. She noted that if she had she read them before her student teacher arrived, she would have more clearly communicated her expectations. Although John met the expectations of his program, Mary was concerned that she did not provide him with enough structure and support. Moreover, she explained that if she had used the sample vocabulary on the Web site, it would have facilitated the evaluation process. Instead, she found herself "inventing vocabulary." When the Field Experience started, Mary was very busy. As a result, it was toward the end of John's teaching experience when she discovered the list of expectations on the Web site. She described the information on the Web site as "tangible." In retrospect, Mary would have accessed the information on the Web site earlier and shared the expectations with John in order to "reinforce particular points during his Field Experience."

Enhances understanding and expectations. Many participants commented on how much the descriptors page facilitated the evaluation process. Both student teachers and cooperating teachers found it easier to "cut and paste" phrases and words which were provided on the electronic forms. Because both the descriptors and the evaluation templates were located on the Web site, participants could simply copy the words from one location and used the paste function to place them in another location. Moreover, through using the Web site, Connie was able to access information from other programs and compare the expectations of those programs with the expectations of the IPT program. In doing so, she was able to explain to other cooperating teachers what they could expect their student teachers to accomplish by the end of the program. Connie explained that this process enabled her to become a better cooperating teacher.

Summary

Although demographical information reflected a variety of backgrounds in terms of age, teaching and Field Experience, all participants were supportive of on-line communication. Furthermore, participants noted that on-line information could be

distributed through a variety of organizational levels. Even though the participants obtained information from the IPT handbook as well as through personal contact with the University facilitator, they acknowledged that using the Web site enhanced understandings of the IPT program.

In order for participants to effectively use the Web site, some considerations remain. These considerations will be explored in the next section.

What Considerations are Necessary to Effectively Use a Web Site?

To effectively use a Web site, three considerations were identified: (a) the technological background of the participants, (b) the network environment of each participant and (c) the design of the Web site.

Technological Background of Participants

Participants displayed similar characteristics depending on their level of experience with computer technology. When participants reported on their experiences using different productivity tools, three distinct levels of users emerged.

Age and computer experience. In this study, there was a high correlation between how old a person is and how many years they have used a computer. The correlation coefficient is .742 and significant at the 0.01 level ($p = 0.002$). Table 13 outlines the relationship between the average age of participants, according to their role in Field Experiences, and their experience (number of years) using computers.

Table 13

Average Age and Average Amount of Computer Use of Participants, According to Field Experience Role

		Years	
Field experience role	n	Average age	Average computer experience
Student teachers	6	23.3	2.4
School staff	6	35.8	7.3
Field Experience staff	3	51.0	16.7
Total	15	33.9	3.9

Productivity tools. The age and number of years that participants have spent using a computer contributes to their level of experience using different computer tools. In the first survey, all participants were asked a variety of questions relating to their level of experience using the following productivity tools: a word processor, electronic mail, the Internet and computer conferencing technology. They were asked to rate themselves according to four levels: "no experience," "beginner," "intermediate" and "expert." Table 14 illustrates that participants were most experienced in word processing and e-mail. With the exception of two participants, everyone rated themselves at an intermediate or advanced level in word processing. Three participants reported to be at an advanced level using e-mail, ten participants reported to be at an intermediate level and two participants ranked themselves at a beginner level. All participants had experience using the Internet. However, six participants indicated that they were working at a beginner level. Of the remaining people, six were intermediate users and three considered themselves advanced users. Computer conferencing was the least used medium. Two thirds of the sample reported that they had "little" or "no experience" with conferencing productivity tools.

Table 14

Experience Level Using Productivity Tools: Summary (N = 15)

Productivity tool	Level of experience			
	No experience	Beginner	Intermediate	Advanced
Word processor	0	2	7	6
E-mail	0	2	10	3
Internet	0	6	6	3
Computer conferencing technology	8	2	5	0

A more detailed table demonstrates that when compared to school and University staff, student teachers reported having little experience using all four productivity tools (Appendix V). All student teachers, with the exception of one, considered themselves to be at a beginner or intermediate level when using a word processor and e-mail (Table V1). Four student teachers claimed to be at a beginner level using the Internet and five student

teachers reported having no experience using computer conferencing technology. School staff considered word processing and e-mail to be the two productivity tools with which they were the most proficient (Table V2). None of the participants in this group considered themselves to fall below the intermediate level using these tools. One cooperating teacher considered herself to be a beginner level Internet user. All others considered themselves to be at an intermediate or advanced user level. Although two school staff members considered themselves to be intermediate level conferencing users, the remaining participants at the school level reported to have little or no experience using this tool. All staff from Field Experiences considered themselves to be advanced users in word processing (Table V3). They reported being at an intermediate level using e-mail but at different levels using the Internet. Each of the three staff members from Field Experiences had used computer conferencing technology: two participants claimed to be at an intermediate level while one participant claimed to be at a beginner level.

Although all participants used the word processor, e-mail and the Internet, staff from schools and Field Experiences had more experience at the intermediate and advanced levels. Staff from schools and Field Experiences also reported having had at least some experience using computer conferencing technology. Student teacher participants had little or no experience in computer conferencing.

Overall experience level. In determining the needs of prospective Web site users, I compared differences between users based on their experience using productivity tools (Table 15). These findings are organized according to the following user levels: beginner, intermediate and advanced. To calculate a user level for each participant, I considered what level the individual gave himself or herself for each of the four productivity skills. If participants viewed themselves at the same level on at least two of the four items, I used this value to indicate an overall level of experience. For example, Janice, a student teacher, gave herself two intermediate ratings using a word processor and e-mail and one beginner rating using the Internet. She indicated that she did not have experience using conferencing technology. Given that she had selected two intermediate level ratings, her overall level was considered to be intermediate as well. Student teachers considered themselves to be the least experienced, while school and Field Experience staff considered themselves to be

mostly intermediate users.

Table 15

Overall Level of Computer Experience, According to Field Experience Role

Role in field experience programs	n	Overall level of computer experience		
		Beginner	Intermediate	Advanced
Student teachers	6	3	2	1
School staff	6	0	5	1
Field Experience staff	3	0	2	1
Total users at each level	15	3	9	3

Through analyzing the qualitative and quantitative data provided in the first survey, I was able to construct a user profile for each type of computer user--beginner, intermediate and advanced. Profiles at each level exhibit certain characteristics. These characteristics relate to the type of tasks users are able to perform at each level. Participants differ in the number of years of experience they have and the amount of time they spend using a computer each day.

Beginners used the computer for two activities: word processing and e-mail. Their experience ranged from 6 months to three years. Beginners reported using the computer between 15 minutes to 1 hour per day. Student teachers were the only group who were placed in the beginner user level.

Intermediate users are participants who considered themselves to be adept at using the computer in several different ways. This category of users was comprised of cooperating teachers and University staff. Examples of daily computer tasks included the preparation of instructional materials such as lesson plans and tests. The experience of intermediate users ranges from 3 to 20 years. Intermediate users reported one to four hours of computer use each day.

The computer experience of advanced users ranges from 2 to 20 years. While the two-year user may have had fewer years to develop their skills than someone with twenty years of experience, this would not necessarily be indicative of their level of experience. Advanced users viewed themselves to be proficient with Macintosh and IBM compatible

computers. Reports of computer use ranged from zero to eight hours a day and descriptions of activities varied from work-related tasks to on-line games and Web site development.

Summary. In this study, the greater a person's age and the more time they spent using a computer, the higher was their level of computer experience. Beginner level users employed the computer for word processing and e-mail. Intermediate users were adept at using one platform in several different ways whereas advanced users viewed themselves to be proficient with both Macintosh and IBM platforms for a variety of tasks . Although all participants used the word processor, e-mail and the Internet, staff from schools and Field Experiences had more experience at the intermediate and advanced levels. Staff from schools and Field Experiences reported having had some experience using computer conferencing technology. Student teachers had little or no experience in computer conferencing. Computer conferencing was the least used medium.

Web-Based Environment

Upon reviewing the experiences of participants, I was able to gain insight into different network environments at the University, the Collaborative Schools and in the homes of the participants themselves. The following section outlines participants' experiences in relation to the network environment.

Network. All participants were able to access the Web site via local area networks at work. However, participants had several choices in accessing the Web site from home. Some participants had an Internet connection through an account at the University of Alberta. Others accessed the Web site through another Internet Service Provider.

At Acorn School, Mary reported having no difficulties with the network. However, the first time Janice and her cooperating teacher, Martin, used the Web site, they had problems accessing some of the pages. Upon further attempts, they were able to browse through the entire site. Although John was not able to log in to the site from school, he did not indicate how many times he tried to do so.

The situation was quite different at Blackdale School. During the first week of the study, several participants were not able to access the Web site. When following the instruction sheet (Appendix F) "step 3" resulted in the following message: "ERROR 400

IBM Internet Connection Server 4.2.1.7. Method CONNECT is disabled on this server." From this message, the problem appeared to be server-related. Although the technical support person at Blackdale school reaffirmed that the problem was server-related, he was unable to find a solution. He explained that the company responsible for installing the original network failed to leave a copy of the passwords and that consequently, staff members were able to access public Web sites but not secure ones. As a result, I created a clone of the original Web site on a public server. Although participants from Acorn School and the University continued to use the original Web site, participants at Blackdale School were provided with instructions on how to access a duplicate site using another Universal Resource Locator: http://www.ualberta.ca/~rlyseng. Participants at Blackdale school reported that this rectified the problem.

Two participants shared their unique experiences accessing and using the Web site on campus. Bruce did not encounter any difficulties using a Windows-based machine from a computer lab at the University. However, this was not the case for Richard, a staff member from Field Experiences. He described a somewhat different experience using the Macintosh computer in his office: "I kept getting a message that one of the certificate authorities . . . had expired--most frustrating!" For Barb, a student teacher at Blackdale School, the same message appeared on her Windows-based machine at home. She explained: "The site kept displaying the screen 'certificate authority has expired.' I don't know what this means. It said my certificate had expired but I was finally able to access the site. Maybe it was my computer." Why this appeared on some computer screens and not on others will be discussed in the next chapter.

Two people commented on their experiences accessing the Web site from home. John wrote of the ease of getting into the site and following the Web site access instructions. Having encountered difficulties trying to access the secure site from Blackdale School, Connie reported that accessing the public site from home was easy.

Software. Two main software problems were anticipated in advance of the study: (a) participants not being able to use a WebCT-compatible Internet browser; (b) participants not being able to decompress files from the site. Browser-related problems were limited to a small number of computers while problems with decompressing files appear to be more

wide-scale.

Participants were asked to identify which Internet browser they most frequently used (Table 16). Of a total of 15 participants, 1 person used Internet Explorer, 11 people used various versions of Netscape Navigator and the remaining 3 people did not know which type of browser they used.

Table 16

Type of Browser Used (N = 15)

Type of browser used	n
Netscape 3.0	4
Netscape 4.0	6
Netscape 4.5	1
Internet Explorer	1
Other	0
No idea	3

In an attempt to promote the consistent use of one browser, participants were advised to use Netscape Navigator. Despite following this recommendation, Richard and Barb both reported a problem with an expired certificate authority problem that appeared to be linked to the security setting of the browser.

The process of downloading files was a challenging experience for many participants. At Acorn school, a trial run of the downloading process was completed on one computer in the office without any complications. However, when Janice and Martin first attempted to download a self-evaluation template, they were unsuccessful. Although the icon for the template had transferred to Martin's computer, the file could not be opened. The Winzip software that was required to complete the process had not been installed. In fact, the only computer in the school that contained the Winzip software was the same machine that was used for the trial run. Although cooperating teachers were invited to use the office computer, I performed a search on the Internet and found a Freezip utility program which required a relatively small amount of memory. This program was sent to

Martin, along with information and instructions, so that teachers could download files from their own stations. At Blackdale School, all three cooperating teachers were unsuccessful in their attempt to download the evaluation template from school. Connie said that an error message reappeared on her computer screen. Recognizing that this was a recurring problem, a copy of the evaluation templates was sent to each cooperating teacher via electronic mail.

With respect to downloading the evaluation templates from home, I received feedback from three participants. Connie thought that she was able to copy an evaluation template on to a floppy disk. However, she commented: "It came up as some kind of gibberish." After attempting to save her document under another name, the process repeated itself. Even though Brian thought that he had properly installed the Winzip decompression software on his computer, he, too, was also unable to decompress files. John was the only participant who did not report any problems downloading files from the Web site. During a telephone conversation, John clicked his way through the site as I guided him through the process.

Operating System. Of a total of 15 participants, 13 people used Windows-based computers in the workplace (Table 17). Staff and student teachers at Blackdale school used Windows 3.1, the lower version of the Windows operating system, while staff and student teachers at Acorn School used Windows 95, a more recent version. At the University, one Field Experience staff member used Windows 95, while the other two staff members used a Macintosh system.

Table 17

Type of Operating Systems at Work and at Home (N = 15)

Operating system	Location	
	School	Home
Windows	13	9
Macintosh	2	5
DOS	0	0
Other	0	0
Do not have computer	0	1

When asked which operating system participants used from their homes, nine people reported having a Windows-based computer while five people indicated having a Macintosh computer. One person did not have access to a computer from home.

Although Robert used a Windows-based computer to evaluate the majority of the Web site, he started out using a Power Mac 6100/66 computer. He said that the resolution on the screen of the Power Mac was poor, because the text was broken up and difficult to read. All other problems reported with operating systems were previously noted as "network" and "software" considerations related to the network environment.

Summary. The majority of difficulties reported with using the Web site were either network or software related. However, a small number of problems may be explained by the type of operating system. Computers with older operating systems are sometimes networked with computers that have newer versions of an operating system. As a result, it is difficult to account for every situation. In the next section of this paper, I will address one other consideration to effectively use a Web site--the design of the site itself.

Design of the Web Site

In determining effective ways to use the Web site, design is a factor that must be considered. Three main design elements were identified as having the greatest impact on participants using the Collaborative Schools Web site: (a) entry access to the site, (b) navigation and (c) visual display.

Entry access to site. When asked to respond to the following statement: "I was able to log in to the site with success," most participants provided a positive response (Table 18).

Table 18

Ability to Log in to the Web site

	Attitude scale				
Statement	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
B4. I was able to log in to the site with success.	0	1	3	6	5

However, in response to statement B4--"I was able to log in to the site with success"--three participants selected "3" ("neutral"). Anecdotal records reveal that one of these participants, John was unable to log in successfully from Acorn school. When John tried to log in from home, he did not encounter any difficulties. As a result, John could neither agree nor disagree with the statement. When responding to the same statement, two participants from Blackdale School also responded with "neutral." Again, these participants could neither agree nor disagree with the statement. These ratings can be attributed to the networking difficulties encountered at Blackdale School. Although participants were eventually successful accessing the public site, initial attempts with the secure site were futile.

In summary, the findings related to access demonstrate that the majority of participants (9) were able to log in to the site without any complications. If participants were unable to enter the site, it was due to a misplaced instruction sheet or a case sensitive login ID and password.

Navigation. Most participants were able to browse the Web site with ease. In the second survey, participants were given a series of six statements. They were asked to note how much they were in agreement with each statement (Table 19).

Table 19

Ease of Navigation of the Web Site (N = 15)

Statement	Attitude scale				
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
C1. You can move from page to page, link to link, item to item with ease, without getting lost or confused.	0	0	0	9	6
C2. There are sufficient links for both backward and forward movement.	0	0	0	8	7
C3. The links are helpful and appropriate.	0	0	0	9	6
C4. There is a sufficient number of links.	0	0	3	7	5
C5. There are links to other helpful sites.	0	1	3	6	4
C6. All links are clearly labelled and serve an easily identified purpose.	0	0	0	9	5

In response to the first statement, all participants were in agreement that it was easy to navigate within the site. Rhonda rated the statement a "5" ("strongly agree"). She particularly liked the ease with which the Web site could be followed. Janice and Mary rated it a "4" ("agree") commenting that the Web site was "user friendly" and that the information was "organized into categories and well laid out."

When asked whether the number of links to allow for backward and forward movement was sufficient, participants agreed. Three participants at different user levels

drew upon prior experiences with the Internet to justify their statements. Connie, a beginner Internet user liked the navigational links within the Web pages. She stated:

> If you got to the bottom of the page and wanted to go back up, instead of having to scroll, you could hit the "to top of the of the page" button and it would go right back to the top. I thought that was quite effective.

Connie was referring to a hyperlinked text or icon that is commonly found in sections of a Web site that have more than one page of text. Rather than using the side scroll button to return to the top of the page, the hyperlink facilitates the task.

Mary, an intermediate level user, explained that this site was one of the easiest ones she had ever used. She said that she had come across some "poorly constructed" Web sites. When asked to describe a poorly constructed site, she said:

> When I go into a page, I may have four to five different categories to choose from. When I select one of the categories, it takes me to a page that does not link back to the home page again. I almost have to get out of the Web site, retype the address and go back in. But this site wasn't like that. It was very simple to go back and forth.

What Mary was describing was a design error in some Web sites that is referred to as a "dead end." This occurs when the user is provided with no links back to a previous page or part of the Web site. In this situation, in order to re-enter the Web site the user has no choice but to exit the browser or retype the Web site address.

Robert, an advanced user, suggested that instructions be provided for external sites. He suggested that users be informed about using the "Back" icon when off-site. Robert was referring to the icon on the top left side of the browser window that allows a user to return to the previous Web page. Many novice users of Windows-based machines make the mistake of closing the browser window on the screen. In other words, they click the 'X' in the top right part of the window. When this happens, the window disappears and the computer exits the browser. In order to re-enter the Web site, the user needs to restart the browser.

In response to the remaining statements (C3 - C6), several comments pertaining to links were expressed in the form of recommendations. Although the final chapter will

pertain specifically to recommendations, what follows is a brief synopsis of the findings in relation to these statements.

All participants were in agreement that the links were helpful and appropriate (C3). Participants were also in agreement that the links were clearly labelled and served an easily identified purpose (C6). Regarding the number of links on the Web site (C4), 12 participants agreed that the number of links was sufficient while three participants expressed a rating of "3" ("neutral"). When asked about links to other sites (C5), ten participants stated that the external links were helpful, while three participants rated the statement a "3" ("neutral"). One person expressed disagreement, providing a rating of "2." This may be attributed to the fact that one of the links to a February 24, 1998, Alberta Teachers' Association news article on the Collaborative Schools Initiative was not active. When the Web site was originally created, the article was located on an active page. Unfortunately, the page was taken off the Web server sometime throughout the period of data collection.

In summary, many participants were able to navigate through the Web site with ease. However, some participants suggested that additional links to other sites would be helpful. Suggestions for sites will be provided as "recommendations" in the next section of this chapter.

Visual display. The visual display (screen design) of the Web site relates to how the information is presented in terms of its color, background, icons and overall legibility. Participants were asked to respond to one statement pertaining to the visual display of the home page (B2) and three statements regarding the visual display of the Web site overall (D1 - D3). Table 20 lists the frequency of participants' responses to each of these statements.

Table 20

Visual Display of the Web Site

Statement	Attitude scale				
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
B2. The home page is attractive, has strong eye appeal.	0	0	2	11	2
E1. The graphics make a significant contribution to the site.	0	1	3	6	5
E2. The graphics are clearly labelled, clearly identified.	0	0	0	9	5
E3. Each graphic serves a clear purpose.	0	0	2	8	4

The majority of participants found the Home Page to have strong visual appeal (B2). Two participants, both advanced users, responded to this statement a "3" ("neutral"). Robert noted that he had difficulty reading the welcome banner on the homepage. As a result, Robert suggested that the colour of the banner be changed in order to clearly highlight the lettering. Initially, Connie was also critical of some colors. However, upon a second examination of the site, she realized that her comments were contradictory. Originally, Connie stated that the green and purple lettering on the site map was difficult to read. When she reviewed the site again, she discovered that it was the icon, not the lettering, that was purple and green.

Eleven participants agreed that graphics made a significant contribution to the site (D1). However, John, one of the three participants who rated the statement a "3" ("neutral"), commented that the Web site needed more multimedia features.

All but one participant noted that the graphics were clearly labelled (D2). Robert did not respond to this statement. When asked about this, he commented that he liked the *lack* of graphics on the Web site. He felt that the statement did not allow him to respond in a

way that would appropriately convey his feelings.

Although the majority of participants agreed that the graphics served a clear purpose (D3), Robert did not provide an answer for this statement. He suggested that some of the text in the "Field Experiences at a Glance" section of the Web site be boldfaced to highlight key points.

Even though participants were satisfied with the visual display of the Web site, suggestions related to the color of icons, text format and choice of graphics may enhance its overall appeal.

Summary

This section described three considerations in order for participants to effectively use the Web site. First, the technological background of participants was addressed. In order to determine the training needs of participants, productivity skill levels and overall computer experience were assessed and a user profile was created for each individual. Second, the network environment of each participant was assessed. Many of the problems reported were either network or software-related. However, some problems appeared to be linked to the operating systems used by participants. A final consideration pertained to the design of the Web site. Participants were generally satisfied with the Web site in terms of entry access, navigation and visual display.

In order to accommodate a wide range of users, it is important to determine the effectiveness of the Web site in terms of providing information and enhancing communication. In the next section, findings will be presented regarding the overall effectiveness of the Web site and the usefulness of its different components.

How Useful is the Web site Prototype?

Participants felt that, overall, the Web site achieved its intended purpose--to provide information and facilitate communication to participants in Field Experience programs. Their feedback indicates that specific components of the Web site were particularly useful. First, findings pertaining to the usefulness of each of the seven main components of the site are presented. This is followed by a summary of participants' overall perceptions of the Web site.

Web Site Components

Participants were asked to rate the usefulness of each of the components of the Web site: (a) the homepage, (b) the overview of the Collaborative Schools Initiative, (c) the overview of Field Experiences, (d) the information handbook for the Introductory Professional Term, (e) the calendar, (f) the templates and forms and (g) the site map (Table 21). A five-point scale was used to rate each component. A rating of "1" indicates that a component was viewed to be "not useful," while a rating of "5" indicates that a component was viewed to be "very useful." Some components were given ratings of "3" ("neutral") or "2" ("limited").

Table 21

Usefulness of Web Site Components (N = 15)

	Level of usefulness				
Web site component	Not useful (1)	Limited usefulness (2)	Neutral (3)	Somewhat useful (4)	Very useful (5)
Homepage	0	0	0	7	8
What is the Collaborative Schools Initiative?	0	0	1	8	6
Field Experiences at a glance	0	0	0	6	8
IPT Information handbook	0	0	0	2	13
Calendar	0	1	2	3	9
Downloadable templates and forms	0	0	4	1	9
Site map	0	2	4	7	2

Homepage. All participants agreed that the homepage was useful. Seven participants indicated that the homepage was somewhat useful, while eight participants indicated that it was very useful.

Overview of the Collaborative Schools Initiative. Fourteen participants found the overview (e.g. "What is the Collaborative Schools Initiative?") to be useful. However, one participant rated this section with a "3" ("neutral"). Robert stated that the information in this

section was "straight forward." Connie described the information as "interesting, helpful and insightful." She admitted not knowing a lot about the Initiative and noted that her knowledge increased upon using the Web site. She also stated that she was not aware that there were so many Collaborative Schools and that it was interesting to look at some of their Web sites.

An overview of Field Experiences. With the exception of one person who did not provide a response, all participants indicated that the overview of Field Experiences ("Field Experiences at a glance") was useful. Of the 14 participants who responded, 8 people found this section to be "very useful" and 6 people found it to be "somewhat useful."

IPT handbook. Participants felt that the electronic version of the IPT handbook was particularly useful: thirteen people responded with "very useful" while two people responded with "somewhat useful." In relation to this observation, the five participants who provided written feedback offered some insights. Bruce felt that the on-line handbook was "easy to use." Mary said that she liked using the Web site because of its "instant availability." Rather than looking for a paper copy of the handbook in the staff room, she was grateful to be able to use her desktop computer. Carol described the on-line version of the handbook as being "user friendly." She commented that it was much easier to find information with the electronic handbook than with the paper version. For similar reasons, Brian said that he never used the paper version of the handbook at all.

Calendar. Most participants felt that the calendar was useful. Although two participants rated the calendar feature with a "3" ("neutral") and one participant rated it with a "2" ("limited usefulness"), no qualitative data was given to support these numbers. Comments from two cooperating teachers show the calendar to be a functional tool. Carol described the calendar as "one of the most useful components of the Web site." Mary commented that the calendar "clearly identified important dates." This was helpful, she noted, because "deadlines are an important part of a teacher's job."

Student teachers also shared their thoughts pertaining to the calendar. Given a situation where a student teacher might need to withdraw from a program, Bruce felt that the calendar could be "especially useful." While Barb described the calendar as "a helpful reminder," Betty described it as "a good way for student teachers to stay connected with the

University." Janice rated the calendar with a "5" ("very useful"). Janice remarked that the only specified dates and deadlines that were limited to the initial and final days of the Field Experience. Although she indicated that the calendar could serve additional functions, she did not provide any examples.

Templates and forms. Although many participants reported problems with downloading files, this was not reflected in the survey. Of the 14 participants who rated the usefulness of having electronic templates and forms, 10 people confirmed that this option was useful while 4 people responded with "neutral."

In examining the data, I sorted responses to the survey question according to participants' roles in Field Experience programs (Table 22). All three staff members from the Division of Field Experiences reported that the option to download files was very useful. Moreover, when trying to download files, staff from Field Experiences did not report any difficulties. However, at the school level, responses differed. Although most participants indicated that the templates and forms section was useful, two student teachers and two cooperating teachers selected "neutral." Accordingly, several school staff and student teachers also reported problems downloading files.

Table 22

Usefulness of Downloadable Templates and Forms, According to Field Experience Role

		Level of usefulness				
Field Experience role	n	Not useful (1)	Limited usefulness (2)	Neutral (3)	Somewhat useful (4)	Very useful (5)
Student teachers	5	0	0	2	0	3
School staff	6	0	0	2	1	3
Field Experience staff	3	0	0	0	0	3

Although some participants provided a rating of "neutral," their comments were indicative of an appreciation for the option to download files. For example, two participants, Brian and Connie, provided favourable comments. Both rated this option a "3" ("neutral") and both were unsuccessful in downloading the evaluation template. Brian,

however, noted that the electronic template and forms were "great tools." He noted:

> I really liked the templates . . . if you could get them off there [the Web site], that would be an absolutely wonderful asset. The downloadable templates and forms would have been useful if I had been able to access them.

For three other participants, there were no problems downloading templates from home or school. Martin noted that it was "easy to do." Mary also commented that the forms and templates were "easy to access." Robert stated that the templates and forms were "easily accessible" from the Web site.

Site map. An initial analysis of the data revealed that ten participants found the site map useful. However, one person rated the site map with a "2" ("limited usefulness") and four people rated it with a "3" ("neutral"). A more thorough analysis of the data indicated that intermediate and advanced level users found the site map to be more useful than those at the beginner level. Robert, an advanced level user and staff member from Field Experiences, found the site map very useful. He felt that it was "a good addition to the site." Janice, an intermediate level user and student teacher, found the site map somewhat useful. She noted that she used it on only one occasion. Bruce, a beginner level user and student teacher, rated the site map a "3" ("neutral"). He was unsure about why it was included on the site. However, upon learning that a site map allows a user to preview information, Bruce then understood its relevancy.

In conclusion, participants felt that most components of the Web site were useful. To capture broad perceptions and impressions about the Web site, participants were asked to rate it in terms of overall quality.

Overall Quality

All participants found the Web site to be useful (Table 23). All three participants from Field Experiences, one school staff member and two student teachers rated the Web site with the highest possible score: "5" ("very useful"). The majority of student teachers and school staff rated the site with a "4" ("somewhat useful").

Table 23

Overall Usefulness of the Web Site, According to Field Experience Role

		Level of usefulness				
Field Experience role	n	Not useful (1)	Limited usefulness (2)	Neutral (3)	Somewhat useful (4)	Very useful (5)
Student teachers	6	0	0	0	4	2
School staff	6	0	0	0	5	1
Field Experience staff	3	0	0	0	0	3
The web site overall	15	0	0	0	9	6

Comments pertaining to the overall quality of the Web site were found to fall into two categories: (a) efficiency and (b) effectiveness.

Efficiency. According to participants, the purpose of the Web site was achieved--it provided information and facilitated communication between participants in Field Experience programs. First, findings pertaining to the Web site's ability to provide information will be presented. This information will be followed by findings pertaining to the Web site's ability to facilitate communication.

All participants in the study agreed that the content of the Web site contributed to its overall quality (Table 24). Several participants felt that there was enough information on the site. One of the features that Bruce particularly liked about the site was that "there was not too much information." As a novice Internet user, Bruce occasionally felt overwhelmed by the abundance of information in some sites. Connie also expressed satisfaction with the site, however, she noted that as she gained more experience with computers, she would probably think of more elements to add to it.

Table 24

Participants' Evaluation of Web Site Content (N = 15)

	Attitude scale				
Statement	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
D1. There is sufficient information to make the site worth visiting.	0	0	0	9	6
D2. The information is clearly labeled and organized.	0	0	0	9	6
D3. The content effectively achieves its intended purpose.	0	0	1	10	3
D4. The content of linked sites is appropriate.	0	0	2	7	5

Participants found information to be clearly labelled and organized. Janice and Connie noted that the Web site was "well put together." Likewise, Mary described it as "a well laid out tool." All but two participants agreed with statement E3, that "the content on the Web site effectively achieved its intended purpose." Betty, a student teacher at Blackdale School, chose not to respond to this statement and noted the following: "I was not sure what to expect." Connie, also, noted that she did not know what to expect prior to using the Web site. For this reason, she responded to statement E3 with "neutral." As a result, 13 out of 15 participants agreed that the Web site achieved its intended purpose.

In relation to the linked sites (E4), most participants noted that the content was appropriate. Brian stated that the Web site was "both an informative and efficient reference tool." Only one participant, Janice, did not provide a rating for this statement.

An analysis of the findings revealed that the Web site facilitated communication to participants in two ways. The Web site was (a) easy to use and (b) time-effective. Two participants felt that no training was required in order to use the site. Bruce, a novice user, explained why he felt this way: " . . . I'm a prime example. I rarely get on the computer to

look up Web sites. And I had no problem: got around easy, never got lost . . . got the information I wanted."

Connie, an intermediate user, noted that the organization of the Web site was straightforward:

> The way that it was laid out, with the icons at the top of the page, was very clean. It wasn't cluttered. You clicked on the icon, it gave you the information you required and it was easy to get back to the original page . . .

Connie's comments suggest that she found the instructions and navigational cues on the Web site to be clear and easy to follow.

The speed of the Web site was frequently referred to by several participants. Responses to statement A1 suggest that participants were able to access the homepage at a relatively quick rate (Table 25).

Table 25

Participants' Perceptions Regarding the Rate for Downloading the Homepage (N = 15)

	Attitude scale				
Statement	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
A1. The home page downloads efficiently.	1	1	1	8	4

Robert described the site as "simple and fast." He liked the fact that there were not a lot of graphics on the site because, generally, they increased the time required to access files. The textual layout of the Web site was also referred to. Janice said that with some Web sites, she spent a lot of time "scrolling down" through large pages of text. Instead, she preferred pages that were divided into smaller pieces of text that could be quickly scanned for information. Janice enjoyed using the Collaborative Schools Initiative Web site, she stated, because the text was "broken up" and "easy to read." Mary, in particular, liked the idea of being able to specify which items she needed in print form. She felt that paper could be saved if users could simply choose what they needed from the Web site

instead of having to refer to an entire handbook of information.

Effectiveness. Participants found the Web site to be: (a) valuable and (b) motivating. Rhonda, a staff member from the Division of Field Experiences, commented that the Web site would be "a valuable resource for all involved." Richard described the Web site as "a tremendous contribution to Field Experiences." Martin, a cooperating teacher, saw the Web site as "a valuable information tool for both student teachers and cooperating teachers." In a conversation with Brian, a student teacher at Blackdale School, he remarked, "You nailed it!" He added that he gave the Web site address to many of his friends, the majority of whom did not have handbooks. From the point of view of one cooperating teacher, Mary, three sections were particularly useful: the expectations, the calendar and the evaluation templates. Barb, a student teacher, noted that the Web site was very useful for two reasons in particular. She stated, "It thoroughly described information" and "it answered any questions that I had about Field Experiences."

Participants were motivated to use the Web site for different reasons. Bruce, in particular, was inspired by the design of the site. When asked to specify what he liked about the design, he stated:

> The appearance of the whole. It's nice, it's bright and it's easy to read. It's not all munched in together, it's spread out. You can easily see the headlines . . . you can easily see each area.

Summary

Three components of the Web site were identified as being particularly useful: (a) the homepage, (b) the overview of the CSI and Field Experience programs and (c) the on-line version of the IPT handbook. The findings relating to the overall quality of the Web site suggest that it was both efficient and effective. It not only achieved its intended purpose, it was practical and time-effective for the great majority of participants. Recommendations regarding how the Web site may be enhanced will be presented in the next section.

What Recommendations do Participants Provide in Relation to the Web Site Prototype?

Participants provided two types of recommendations related to the Web site. The first relates to ways of enhancing the Web site. As a result, a variety of suggestions were

given regarding additional features. The second type of recommendation concerns optimizing Web site use. As a result, suggestions for instructional support were also noted.

Enhancing the Site

Recommended additions to the Web site were categorized in two areas: (a) "static additions" and (b) "interactive additions." While the prototype for this study consisted of a static Web site, several participants indicated that interactive features would also be useful.

Static additions. Participants suggested the inclusion of three static additions to the site: (a) instructions for downloading files, (b) additional links to external Web sites and (c) a glossary of terms.

Three participants recommended that written support be provided on how to download files. Betty, a beginner user, noted that she would have been less confused if instructions had been provided. Richard, an intermediate user, proposed adding a message to confirm whether or not a file has been successfully transferred to the user's computer. Robert, an advanced user, suggested adding a prompt to allow the user to indicate where the file should be saved.

Three advanced users indicated that links to other sites would be useful. Robert suggested that the following links be made accessible from the handbook: a link to the University of Alberta home page, a link to the department of Secondary Education and a link to the course "Managing the Learning Environment" (EDPS 310). Denise suggested the addition of a link to the Faculty of Education as well as links to related programs at Concordia College, King's College and the Faculté St. Jean. She noted that many teachers are not aware that these institutions are affiliated with The University of Alberta. Denise also suggested adding links to sites about current topics such as "student assessment" or "multiple intelligences." Rhonda commented that the Web site would make a logical "home" for the Collaborative Schools Initiative newsletter, "Collaborative Chronicles." Rhonda viewed an on-line version of the newsletter as an opportunity for the Division of Field Experiences to save paper and distribution costs.

Robert suggested the addition of a glossary to clarify the meaning of various terms in Field Experiences. He felt that a glossary would be particularly helpful for people new to

Field Experiences.

Interactive additions. Recommendations to make the site more interactive came from several participants. In terms of additions to the Web site, these recommendations fell within two areas: (a) a questions or comments section and (b) a conferencing or "chat" section.

Mary suggested adding a section to the Web site for users to submit questions or comments whenever necessary. To facilitate communication, Mary indicated that users could submit messages to a Web site contact person. Depending on the nature of the message, this person might answer it immediately or forward it elsewhere for further consideration.

Many participants suggested the addition of conferencing options such as bulletin boards and chat rooms. Robert, Bruce and Connie suggested that a conferencing section would provide an additional mechanism for communicating with other Field Experience participants. Connie stated:

> A conferencing section would be marvellous! Lots of times as a cooperating teacher and as a student teacher, you have things going on and you wonder: 'Is this normal? Is this right? I need to ask somebody.' If there could be a place where you don't feel threatened . . . where you're not feeling like you're going to be judged, that would be wonderful.

Furthermore, Connie suggested that a contact person or mentor might be assigned to a group of schools. She suggested that this person could facilitate two on-line discussion groups--one for cooperating teachers and one for student teachers. Janice indicated that a bulletin board could provide student teachers with an informal means to post messages to one another outside the confines of a school or a classroom. Mary suggested that a chat room could enable cooperating teachers to share items related to Field Experiences.

Enhancing Use of the Site

Participants suggested that a contact person such as a Web site administrator would be a valuable addition to the site. Mary, in particular, thought that a contact person would facilitate the communication process. In order for this person to be more accessible to users, Robert suggested adding an e-mail link at the bottom of each Web page.

Summary of the Findings

The findings were presented according to the five principal research questions: (a) Can a Web site provide timely information to participants involved in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are required to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants provide in relation to the Web site prototype?

First, I identified three ways in which participants perceived the Collaborative Schools Web site to provide timely information: (a) it met an identified need, (b) it supported educational change and (c) it was time-effective for the user.

Second, participants noted that through using the Web site, information could be widely and equitably distributed through a variety of organizational levels. As a result, the Web site enhanced participants' understandings of the IPT program.

Next, three items were identified as key considerations when using the Web site: (a) the participants' technological background, (b) the participants' network environment and (c) the design of the Web site. Student teachers had the least amount of training and the least amount of computer experience. School and Division of Field Experiences staff members had the greatest number of years of training and computer experience. The network environment of each participant was found to vary greatly. Although some individuals reported having network or software-related difficulties, this was not viewed to be problematic overall. Regarding design, participants were generally satisfied with the visual display of the Web site as well as with their ability to enter and navigate through it.

Fourth, the usefulness of individual components of the Web site was identified. In particular, participants found the homepage, the on-line version of the IPT handbook and information pertaining to Field Experience programs and the Collaborative Schools Initiative to be effective. Overall, participants found the Web site to be both efficient and effective.

Finally, a variety of ways to enhance the Web site were suggested. Recommendations were provided regarding static and interactive additions. Many

participants acknowledged a desire to communicate with colleagues by way of on-line conferencing and bulletin boards. They suggested that a contact person would be a valuable resource in terms of maintaining the Web site and facilitating discussions between participants. The significance of these findings will be discussed in the next chapter.

Chapter V: Discussion

In this chapter, I discuss the findings in relation to the literature. The findings are presented according to the five research questions: (a) Can a Web site provide timely information to participants in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are required to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants have in relation to the Web site prototype?

Can a Web Site Provide Timely Information to Participants in Field Experience Programs?

The Web site provides "timely information" to participants in several ways: (a) it is a mechanism to support Field Experience participants and (b) it is also a mechanism to support the current reality in education.

Supports Field Experience Participants

There are several ways in which University personnel can facilitate regular communication and provide timely information to Field Experience participants by (a) supporting Field Experience liaisons and (b) supporting school personnel. An analysis of the findings in the literature and in the study suggest that a Web site could serve as an additional mechanism to communicate up-to-date information to Field Experience participants.

Field Experience liaisons. Liaisons are individuals who are formerly assigned to serve as intermediaries among various departments or committees (Hoy and Miskel, 1996, p. 339). At the University of Alberta, Field Experience liaisons (i.e., school coordinators and University facilitators) have been instrumental in creating and maintaining collegiality between school and University personnel (Armstrong et al., 1999).

University facilitators are usually Faculty members, graduate students in Education or former educators. They make weekly visits with student teachers during their Field Experience, provide support to cooperating teachers and student teachers, and communicate regularly with the school coordinator.

School coordinators are described as "key to the success of the Collaborative

Schools Initiative" (Armstrong et al., 1999). Their primary role is to communicate with school and University personnel. Aside from providing student teachers with a meaningful whole-school experience, school coordinators are responsible for solving Field Experience-related problems at the school level and ensuring proper evaluation procedures (Armstrong et al., p. 9). As a result, school coordinators have been instrumental in providing school personnel with a clear understanding of the CSI, a program with which many student teachers and cooperating teachers have little experience.

In past studies of Field Experience programs at the University of Alberta, facilitators were found to be excluded from the "collegial bond established between school staff and student teachers" (Chamberlin & Valance, 1991, p. 144). However, more recently, the general perception of the role of the University facilitator is changing from one of an evaluator to a collaborator (Gale-Smith, 1995). This has been an important factor in fostering better relations between school and University personnel. Currently, one of the greatest challenges of personnel in Field Experiences at the University of Alberta involves maintaining effective communication with liaisons (personal communication, B. Maynes, Assistant Dean, Division of Field Experiences, November 28, 1998). Although existing channels of communication between schools and the University are adequate, an alternate form of communication such as a Web site would be advantageous.

At Blackdale School, Connie described the facilitator as the "link" between two distinct learning environments--the theoretical University-based environment and the practical school-based environment. She suggested that facilitators plan more collaborative sessions for student teachers and school staff, and described an activity that she had coordinated at a former school in conjunction with the University facilitator. Together, they selected topics that were explored on a weekly basis with interested student teachers and staff. Through this experience, Connie noted several ways in which communication was enhanced between University and school personnel. First, the meetings helped the University facilitator to better understand procedures and occurrences at the school level. Second, the meetings helped to actively engage the facilitator, the school coordinator, the cooperating teachers and the student teachers, all of whom were able to share practical ideas with one another. Third, the activity helped the facilitator better understand and

communicate the needs of Field Experiences to individuals within the schools, and vise versa. In relation to the Web site, activities such as this might be shared with others on-line. With many schools personnel are still learning about the CSI, the immediate nature of a Web site would be beneficial.

The more Faculty members work in conjunction with school personnel, the more they understand the needs of teachers, students and pre-service teachers (Reid, 1999). Consequently, there are more relevant connections between theory and practice (Swanson, 1995). In relation to the CSI, the role of the school coordinator and the University facilitator is essential to maintaining effective communication between personnel in the schools and at the University. However, additional support in the form of on-line communication would benefit participants in Field Experience programs as well as other interested individuals.

School personnel. There are a variety of ways in which Field Experience personnel can provide support to participants in schools: (a) by offering advice or assistance through the use of a toll-free telephone number or "hot line" (Bailey, 1997; Witmer, 1998; Eisenman & Thornton, 1999), (b) by providing electronic listservs or "help lines"(Herbster, 1996; Eisenmann & Thornton, 1999) or (c) by offering professional development opportunities (Armstrong et al., 1999; Reid, 1999). The advantage of a Web site is that information is available in a non-threatening environment (personal communication, B. Maynes, November 28, 1998). Consequently, a Web site can be a valuable tool for seeking information about Field Experience programs.

In this study, more than half of the respondents ($n = 8$) indicated that there is insufficient support for Field Experience participants. While several individuals indicated that the Web site provides meaningful information, they stressed the importance of face-to-face interaction with the University facilitator. Although a Web site can support ongoing contact between staff in schools and the University, it would not be effective as the principle tool for communication. Regular visits from a University representative are essential to maintaining effective communication.

Given the current political and economic climate in Alberta, funding issues might result in University facilitators scheduling less frequent visits to schools. Janice, a student

teacher at Acorn School, alluded to this. She stated:

> [T]his may be one of those . . . things where the University says that the facilitator does not have to come out as much . . . [but] people still need human contact. Maybe it could be an option: either you use the Web site or you meet [in person]. . . some people need to see 'people,' rather than 'information.'

Although Janice indicated that the role of the University facilitator could be transformed into a more "virtual" one, she did not view the Web site to be a total substitute for human contact.

The Current Reality in Education

The potential of a Web site to provide timely information is increased when users: (a) demonstrate favourable attitudes towards computer technology, (b) have sufficient access to computer technology, (c) possess the knowledge and skills required to effectively use computer technology and (d) have mechanisms for support.

Favourable attitudes. Studies done at the University of Alberta indicate that computer technology can enhance communication between individuals in an organization (Andrusky, 1998; Anderson et al., 1997). Andrusky (1998) found that students want more on-line access to campus resources and Faculty teaching staff who support computer use. Accordingly, Anderson et al. (1997) found that Faculty teaching staff want to explore ways of promoting Web-based instruction and increasing student use of technology. These findings are reflective of the current direction in schools whereby teaching and learning are moving beyond the traditional classroom context to a more virtual environment (Tapscott, 1998).

Sufficient access. Based on the findings from this study, school and University personnel have sufficient access to computers. While all participants in this study reported having access to a computer at work or school, 93% (n = 14) also reported having access to a computer at home. These findings are consistent with a study by Andrusky (1998) where 98% (n = 1260) of all students at the University of Alberta either owned or had access to a personal computer.

Survey results from Edmonton Public Schools indicate that virtually all teachers

have access to a personal computer that is connected to the Internet. Furthermore, as a result of the 1996-99 district priority to support technology integration, each school is equipped with at least one computer lab with Internet access. However, the focus on computer technology within Edmonton Public Schools is not necessarily indicative of the situation in other school districts in Alberta. This is a factor which must be considered when determining whether the CSI Web site can facilitate communication between participants in Field Experience programs in various locations throughout the province.

Knowledge and skills. In Alberta, the Teaching Quality Standard and the Information and Communication Technology Program of Studies have provided an impetus for educators to acquire new skills and knowledge in the use of computers. As acknowledged by Mary at Acorn School, the CSI Web site supports the current emphasis placed on technology integration in education.

If educators are required to integrate technology into core subject areas, instructional methods and course requirements within teacher training programs also warrant review. Throughout North America, there is evidence of an increase in technology integration at the post-secondary level (Khan, 1997). The current focus on technology in schools has implications for how instructors organize for courses in teaching methodology at the University level. With regards to teacher training, a comment made by a third year student in an on-line discussion group at the University of Alberta illustrates some of his concerns in relation to technology:

> My issue is . . . when I walk into the classroom to begin teaching, am I going to be prepared well enough to help these students learn computers? Is it the Faculty of Education's job to prepare me to teach computers . . . or is it up to me . . . to take more computer classes on my own? If computers are becoming more available in the classroom, how come the Faculty of Education is not ensuring that all students are updated with the skills to use them?

This student felt that course requirements do not equip students with sufficient knowledge and skills in computer technology to function effectively in today's classrooms. He noted:

> All students in the Faculty of Education have to take a 'beginners' course in computing, but I do not think that prepares us for the classroom. During my four-

> week Field Experience, while teaching computers, the kids knew more about the software than I did. One of the biggest problems was that the University was using different software than the schools. This made it difficult for me to help students and understand their problems (EDIT 535 Issues Forum, November 20, 1998).

Rather than formal course work in computer technology, a Web site offers a mechanism for communication that supports technology integration in education. Consequently, students seeking opportunities to develop skills and knowledge in computers would benefit from the informal learning environment that a Web site can provide.

Mechanisms for support. Access to computers is of little value if users do not understand how to operate them (McVay, 1998). As a result, training and support must be available to users (Nielsen, 1995). Many technology trainers suggest that long-term programs are more effective than short-term programs (Rossett, 1987; Sykes, 1997). Learning is an ongoing process and the rate at which it occurs depends on the background and capabilities of the learner and on the learning environment (Moursund, 1998). A solid training program provides users with time for practice, planning and peer collaboration (Moursund, 1998). However, many employers prefer "just-in-time education"--courses that can be completed "in a few minutes, a few hours, or a few days, just in time to apply the skills when needed" (Moursund, 1998). Wiesner (1998) explains that while learning in small "chunks" is cost and time effective to the employer, it also enables the user to gradually integrate the skills into their job. A Web site is an ideal tool for providing just-in-time education from novices to the very experienced. As a result, it can be an effective mechanism for supporting participants in Field Experience programs.

Summary

In this section, I explained how a Web site can serve as a tool to provide additional support to University liaisons and Field Experience participants, as well as provide information about the Collaborative Schools Initiative. Various factors contribute to the Web site's ability to provide timely information. School and University representatives must demonstrate favourable attitudes towards technology. Computer accessibility must not be an issue. Moreover, educators must be committed to integrating technology into existing curricula and mechanisms must be in place to support them. In these ways, the CSI Web

site supports the current context in education and provides timely information to participants in Field Experience programs.

Can a Web Site Consistently Communicate Information to Participants in Field Experience Programs

Users of the Collaborative Schools Initiative Web site can be considered to be part of a *quasi* virtual organization. Users belong to a variety of organizations (Figure 1), are dispersed geographically and work toward a common goal of enhancing experiences for participants in Field Experience programs. However, CSI participants do not rely exclusively on Web-based technology to communicate with others. They communicate through multiple channels that enable participants to (a) establish and maintain organizational identification and (b) manage information.

Organizational Identification

It is particularly challenging for Faculty staff to establish and maintain organizational identity for off-campus internship experiences. However, as acknowledged by Witmer (1998), communication technologies may help reduce some of the challenges of guiding student internships. While rich communication media (i.e., face-to-face contact, telephone calls) are critical in *creating* organizational identification, lean communication media (i.e., electronic mail, Web sites) are effective in *maintaining* organizational identification once a context has been established (Wiesenfeld et al., 1998, ¶ 54). In order to create a sense of identity among participants in schools, rich communication media were used in the preliminary phase of this study. Later, once a context had been established, the CSI Web site served as a "virtual bridge" to maintaining organizational identification with the University.

Successful Field Experience programs require that University facilitators and cooperating teachers provide ongoing guidance and feedback to student teachers (Gale-Smith, 1995; Witmer, 1998). This guidance and feedback should be provided through multiple channels of communication such as (a) face-to-face interaction (b) telephone communication and (c) electronic mail. In this way, what one medium may lack, it will make up in another (Clark and Brennan, 1991).

Face-to-face interaction. During my visits to schools, student teachers and cooperating teachers indicated that face-to-face interaction is an important means of communicating with a representative from the University. One-on-one contact was an integral part of my role as well. As a University facilitator, school visits provided me with an opportunity to communicate with staff, resolve concerns of Field Experience participants and provide feedback to student teachers. However, my schedule often conflicted with the schedules of student teachers and cooperating teachers. In cases where face-to-face contact was difficult to establish, communicating via telephone and electronic mail was effective.

Telephone. Although most communication with Field Experience participants was done in person or through electronic mail, the telephone was used to schedule observation sessions or follow up on feedback with student teachers. In these cases, the telephone provided a rich medium of communication. However, if I had to leave a message on an answering machine or was unable to establish contact with an individual, the richness of this medium quickly diminished.

Electronic mail. E-mail is a relatively lean medium: messages are generally short and concise. E-mail is also asynchronous in nature: messages can be read or sent at the user's convenience. During the four week Field Experience programs at Acorn and Blackdale Schools, I used this medium to remind participants about deadlines and important information. I usually included links to specific Web pages in case participants wanted to look for additional information. I also used e-mail to send evaluation templates to cooperating teachers. As a result of the speed with which this could be done, e-mail proved to be a valuable means of providing additional support to participants.

Information Management

During the development of the CSI Web site, I was faced with several factors that influenced whether information was consistently communicated to Field Experience participants. Aside from there being no consistent way for users to access information about Field Experience programs, there were four other Field Experience-related Web sites being developed by Faculty of Education staff members.

Lack of consistency. In comparing the four other Web sites that were under construction, there were notable differences between each one. First, the sites resided on three different servers. While the Web site for EDFX 200 students resided on a public server, the Web sites for EDPS 310 students and Secondary Science students resided on a secure server. The on-line student record database was on another server and was only available to select Faculty staff. Second, each site was developed and managed by a different Web site administrator. Consequently, the Web sites were developed using different authoring software. Two WebCT sites were developed using WebCT authorware whereas the EDFX 200 site was developed using a standard HTML editor. As a result of these differences, all four Web sites varied greatly in terms of accessibility, design and structure. If a Web site is to consistently communicate information to participants in Field Experience programs, the construction of alternate Web sites must be considered.

Centralize or decentralize? There was considerable discrepancy in the design preferences of various Faculty staff. This was particularly evident in one meeting comprised of Division of Field Experiences administrators (Faculty of Education Web site meeting, January 13, 1999). The purpose of the meeting was to share information about the content and objectives of each of the five Web sites that were being developed and to discuss possible ways of creating a centralized communication structure for all Field Experience programs. Most Faculty staff were not aware of the number of Web sites being developed for Field Experience participants. The Web site addresses were provided only to those individuals desiring access to the sites. As a result, there were no links made between the Web sites, nor was there a central location or server upon which they could all reside. Some individuals felt strongly about maintaining a decentralized structure so that Web sites could be managed independently of one other. However, most individuals agreed that a centralized site would be particularly beneficial because it would provide more consistent information to participants in Field Experience programs.

Site security and privacy. When Faculty staff were asked to indicate the type of information that should be included on a Field Experiences Web site, there were considerable discrepancies from one individual to another (Faculty of Education Web site meeting, January 13, 1999). Faculty members raised several concerns pertaining to the

security and privacy of information on line. One noteworthy concern is related to the Freedom of Information and Privacy Protection Act (FOIPP). Under the FOIPP legislation, Web site administrators are unable to publish certain information. Connie, a cooperating teacher at Blackdale School, suggested that phone numbers of student teachers and cooperating teachers be included on the Web site. However, the provision of unauthorized personal information such as phone numbers would be in violation of FOIPP (University of Alberta, 1998).

Section 3 of the Report of the World Wide Web Task Force (1996) outlines operational policies and guidelines that Web administrators must follow at the University of Alberta. Web content should be consistent with related campus policies such as Computing and Network Services' (CNS) Conditions of Use, The Code of Student Behaviour and policies issued by the Office of Human Rights (section 3.4). Web administrators are also responsible for receiving copyright clearance on all content (section 3.5) and ensuring that all links, campus information and Internet resources are checked at least monthly and revised as necessary (section 3.3). By definition, the pages of the Collaborative Schools Web site are "official University WWW pages," as they are pages approved by the Division of Field Experiences and relate to the mandate of this Division. Since the University is responsible for all content of an official page, each Web page should (a) be linked to the University of Alberta Home Page (b) display a University of Alberta identifier and (c) contain appropriate legal disclaimers and copyright notification (section 3.1).

Site access. There was much discussion about whether all users be given equal access to various components of the Web site. For example, should student teachers be given access to evaluation templates or should they be accessible only to individuals with supervisory roles such as school and Division of Field Experience staff? Although information can be customized according to the role of Field Experience participants through the use of portals, this is not a standard feature of many educational Web sites. However, portals can allow the designer to customize the site in such a way that student teachers do not have access to particular areas. Since portals are becoming a standard part of many commercial Web sites (Reynolds & Koulopoulos, 1999), they may facilitate the retrieval of information in an educational context as well.

Text versus on-line format. In building the CSI Web site, text from official University documents (i.e., the IPT Secondary handbook) was modified to fit an electronic environment. Consequently, the amount of original text was reduced. Bullet lists were created to highlight information and hyperlinks were added to facilitate navigation. Colors were added that were consistent with the those of the University. Although the format of the original IPT handbook was modified, content was not. There was only one circumstance in which a participant made a remark about the original handbook and the on-line version. Bruce said that he was unable to find information on the role of the student teacher on the Web site. Although this information was posted on the Web site, Bruce was unable to locate it.

Summary

In conclusion, a Web site can enhance the understandings and expectations of Field Experience participants if the Web content is (a) regularly updated, (b) consistent with policies of regulatory bodies (i.e., the University of Alberta, the Province of Alberta) and (c) supported by alternate channels of communication.

What Considerations are Necessary in Order to Effectively Use a Web Site?

When constructing a Web site, designers must (a) assess the needs of potential users (b) consider potential technical problems and (c) consider the varying degrees of experience of users and how they might best utilize their skills in an on-line environment.

Needs Assessment

Field Experience needs. The Web site prototype used for this study was developed according to the needs of various Field Experience participants. As suggested by Rossett (1987), information was gathered from a variety of sources. These sources included (a) information sessions provided to school coordinators and University facilitators (b) surveys administered to school coordinators (c) meetings with Division of Field Experience staff members and Faculty personnel (d) conversations with school personnel and members of the Edmonton Field Experiences Committee and (e) my personal experiences as a cooperating teacher, school coordinator and University facilitator.

Technical needs. The "Web Course Tools" integrated courseware package was selected as the design software of choice for the development of the Web site prototype. As noted by Goldberg (1997), WebCT is an authoring environment for teachers, professors and staff developers who create online courses, online conferences or online training. Several educational tools are available to enhance instruction (i.e., private electronic mail, synchronous and asynchronous conferencing features, a calendar function, etc.). Web CT is widely recognized as the standard user interface for the development of Web sites at the University of Alberta.

Creating, testing and refining the prototype. As stated by Nielsen (1995), Web site development is an iterative process involving a series of user tests and modifications. Preliminary testing of the Web site prototype was conducted in December 1998 and January 1999. During this time, a variety of informal methods were utilized to gather data about the Web site. In one case, ethnographic methods were used to record data. While observing a beginner Internet user navigate throughout the site, I recorded the locations she selected and explored, the time she spent on each page, and her comments and behaviour while using the site. In another case, I asked colleagues, all of whom had a range of experience using different computer platforms, to browse the site and provide informal feedback about their experiences. Based on these observations, I was able to modify and refine the Web site as required. Additionally, the 1998-99 IPT Secondary handbook and parts of the 1997 CSI School Coordinators' Manual were translated into HTML, and the most recent versions of the evaluation templates and forms were uploaded to the Web server. All major components were then tested in a variety of locations. At the end of February 1999, study participants were provided with access to the Web site.

Table 26 indicates the time required to perform an informal needs assessment with Field Experience participants as well as create, test and refine the Web site prototype used for the purposes of this study.

Table 26

Time Required Developing the CSI Web Site Prototype (March 1998 - February 1999)

Development stage	Time (hours)
Administering needs assessment	20
Accessing technical support	14
Developing the prototype	53
Field testing the prototype	10
Refining the prototype	36
Re-testing the prototype	6
Total number of hours	139

Technical Problems Encountered During the Study

Circumstances that contributed to the usability of the Web site included (a) a server-related problem at Blackdale school (b) an expired screen certificate authority and (c) difficulties with file decompression programs. This section includes an explanation of why these problems may have occurred.

Server-related problems at Blackdale school. At Blackdale School, problems with the server prevented participants from entering the Web site and required the construction of a clone. Molich and Gram (1998) would classify this type of server-related problem as a "catastrophe" as it prevented the user from completing tasks and required major reconstruction of the original site (p. 6). Although a message appeared on users screens indicating that an error 400 had occurred, this did not help participants gain access to the site. Instead, the message frustrated them because they did not understand its meaning. The server that was used to run Blackdale's local area network was not configured to access Web sites beyond the "firewall," a type of a border management device that protects data within the network. Although a server which has a firewall recognizes Web pages with an open Internet protocol (i.e., http), it may not recognize Web pages from a secure site with a

closed Internet protocol (i.e., https). Although the installers of the original network should have provided a copy of all passwords to school personnel at Blackdale School, this did not occur. As a result, the only way to gain access to the Web site would be to reconfigure the entire server or use a software program to "break into" the system (personal communication, J. Ward, Systems Administrator, August 18, 2000). In either case, such considerations must be anticipated as they constitute an integral part of effective Web site design.

Expired screen certificate authority. The "certificate authority" is simply a code required to access a secure server. Although an expired certificate authority does not prevent the user from browsing the site, the same message appears every time the user moves to a different screen on the site. This problem can be classified as "serious," but can be alleviated by minor changes to the security setting of the Web browser. The user must go into the "security preferences" file in their Web browser and delete the expired certificate (personal communications, K. Crossman, WebCT coordinator, University of Alberta, January 25, 1999). Although the problem can occur with the Netscape Navigator browser, it occurs more frequently with Microsoft Internet Explorer (personal communications, N. Friesen, WebCT consultant, Academic Technologies for Learning, January 9, 1999). As a result, participants were asked to use Netscape Navigator (Appendix C). This type of problem does not typically occur with computers that are configured for WebCT courseware.

File decompression. When users want to download a particular file, they click on a hyperlink, which connects them to the Web site's server. Each file on a Web site has a particular name. The "file extension," or the three letters that follow the name of the file, indicate the name of the application that created it. For example, on the CSI Web site, three applications were used to create the evaluation forms and templates: Microsoft Word (.doc), ClarisWorks (.cwk) and Corel WordPerfect (.wpd). In the case of large files, Web designers often "compress" them to reduce downloading time. As a result, users require a decompression software program to open the file. The most widely used decompression programs include WinZip (.zip) for Windows computers and Stuffit Expander (.sit) for Macintosh computers. Although the files on the CSI Web site are relatively small, each one

had to be compressed. At the time of study, the WebCT version did not support ClarisWorks, Microsoft Word or Corel WordPerfect file extensions (personal communication, N. Friesen, January 9, 1999).

Participants reported two different problems in their attempts to download a file from the Web site. In either case, the severity of the problem differed for each user. First, the decompression program was not installed on the user's computer. This was the case at Acorn school where the majority of computers did not have enough memory to run WinZip software. Second, participants did not know what to do with a file once the download process commenced. Downloading files is different for Windows and Macintosh computers. When a Windows Web browser encounters a ."zip" file, it prompts the user to either run the program, or save it. The preferred option is to save the file because users are then able to specify where it will be stored (Walker, 1998). When a Macintosh Web browser encounters a ."sit" file, it usually instructs the server to download the file directly to the "desktop." The desktop, or the user's main screen, is the location where the file is automatically opened (Walker, 1998).

Prior to using the Web site, a test run was completed on three different machines. The first test was completed using a Macintosh computer. Initially, there were difficulties downloading the evaluation templates. However, this problem disappeared once the correct decompression utility program was installed. Two other test runs were completed at Acorn school and at the University of Alberta using Windows-based machines. In either case, no other problems were encountered.

During the span of the study, a total of 15 hours were spent managing Web-related problems: (a) 9 hours for creating a clone Web site for Blackdale school participants and (b) 6 hours for providing technical support to study participants. However, as stated by Landauer (1995), such obstacles are inevitable in Web site development. Therefore, it is essential that Web administrators anticipate and eliminate problems as quickly as possible. While minor problems are often fixed by small adjustments to a site, larger problems can be much more time consuming.

The User in an On-Line Learning Environment

A growing amount of research supports on-line instruction at the secondary level (Tapscott, 1997; Carroll, 1998;) and at the post-secondary level (Anderson et al. 1997; Anderson & Kanuka, 1997; Goldberg, 1997; Montgomerie & Harapnuik, 1997; Andrusky, 1998; Hanna, 1998; Irani, 1998; Witmer, 1998; Hall, 1999). Given the move towards on-line instruction as a viable way of teaching and learning, designers and instructors must not only be cognizant of the user's technical needs, they must also be aware of the user's educational needs.

In this section, I discuss the behaviour of computer users and provide ways in which individuals can support computer-mediated communication. As found by Northover (1997) and Mitra et al. (1999), understanding the behaviour of users can be helpful in considering requirements for the effective use of a Web site.

Generation gap. According to Davis (1999), many professors make the assumption that students have a higher degree of experience using computer technology than they actually do. In a study of teacher training institutes in the United States, Bradley (1997) reports that many teacher graduates have minimal knowledge and skills in computers because there are few requirements for students to take technology-related courses. Due to increasing access to computer technology and the advent of on-line instruction at the University of Alberta, the findings from my own research were surprising. Although most student teachers felt comfortable using a Word processor and electronic mail, many said that they were at a beginner level using the Internet and had little or no experience using computer conferencing technology. Upon discovering their limited experience using different productivity tools, I began to wonder why this occurred. Although all six student teachers were in their early to mid twenties, each individual reported having less than four years of computer experience. Given that these individuals were raised in an age characterized by exponential growth in information technology, this finding was unanticipated. Even more surprising was that staff members from Field Experiences and schools had more computer knowledge and skills than the younger generation of student teachers. Accordingly, these findings are suggestive of a gap in computer experience between individuals in differing age groups. As indicated by Tapscott (1997), skills in

computer literacy are characterized by the age and experience level of the user. This has implications for Web site design in terms of supporting both users and non-users alike.

Users and non-users. Will participants in Field Experience programs use a Web site as a means of enhancing communication? The answer to this question is dependent, in part, upon the type of user. Consistent with Northover's (1997) behaviour competency profile, "beginner level users" are able to demonstrate basic computer skills. These skills include word processing, e-mail and basic Internet skills (Anderson et al., 1997; Andrusky, 1998). "Intermediate level users" regularly use basic skills to complete a product (i.e., lesson plan, test, etc.) or task (i.e., Web search) more efficiently. "Advanced level users" are confident using a wide variety of tools to perform more complex tasks (i.e., Web site development). Advanced level users are also able provide technical and instructional support to less experienced users (Sykes, 1997; Tapscott, 1998).

According to Mitra et al. (1999), not only are there several types of users--there are several types of non-users as well. Non-users are those individuals who require "drastic alterations in attitudes" before adopting new technologies. "Technophobes" are individuals who have a fear of computers. "Luddites" are individuals who display a negative attitude towards technology and are reluctant to learn how to use computers. "Laggards" are individuals who wait until most others have used an innovation before they begin using it themselves (Rogers, 1995). At Blackdale school, one participant indicated that it would be especially challenging to persuade certain individuals to use the site. In fact, one individual refused to participate in the study stating that she "hated computers" and did "not want to touch one." Even if access and support are provided, this does not guarantee that individuals will use computers. All Field Experience participants will not necessarily use the Web site to the same degree. However, it is a viable means of communication for users and non-users alike. The difference is that non-users need more time and experience with computers in order to develop an appreciation for the benefits of on-line communication.

Problem solving. As reported by Nielsen (1997a), users of all levels experience frustration when confronted with problems relating to computer technology. While advanced level users can typically find a way of solving technological problems, novice users often do not know where to begin. Most attempts to solve computer-related problems

are done through trial and error or peer-support (Andrusky, 1998; Davis, 1999). Depending on the severity of the problem, users with less experience are more likely to seek assistance. According to my research, those participants who reported problems with downloading files or accessing the Web site were beginner level users. Moreover, these participants preferred a rich medium of communication when they reported problems with the site. As stated by Lengel (1983), a medium is rich if it provides the user with immediate and personal feedback. As a result, it was reassuring for participants in my study to be able to explain technical difficulties when I was available to provide one-on-one assistance.

Ability to provide feedback. In this study, advanced level users were able to clearly articulate Web-related problems. Through using precise terminology, they were able to provide constructive feedback relating to the Web site. While many beginner and intermediate level users provided a significant amount of feedback, their terminology was often confusing and, on some occasions, required additional clarification. In order to provide meaningful information in situations where support is required, Web designers and administrators must consider the ability of users to communicate problems. Otherwise, it is difficult to assess and meet user needs.

Mentoring programs. Instructional support can be meaningful when provided by individuals such as colleagues or peers who serve as informal mentors (Bailey, 1997; Sykes, 1997; Tapscott, 1998). Consequently, more emphasis should be placed on informal methods of support (Davis, 1999).

Overall, participants reported having little trouble using the Web site. However, certain participants did not visit key areas. As a result, these individuals lacked the benefits of external links to other sites as well as many useful tips and ideas. As suggested by McVay (1998), informal orientation sessions may be helpful in informing users of important material and features of the site. These considerations have implications for the design and use of a Web site. Mentorship programs can support users of all levels as the informal nature of one-on-one communication is an effective means of acquiring skills and solving problems in a collaborative environment.

Summary

There are certain aspects that a Web designer must consider before users are able to effectively use a Web site. First, a Web designer must be aware of the needs of the users. A prototype should be developed, based on an ongoing needs assessment of the users and their affiliated organizations. Second, a designer must be aware of possible technical problems that users could encounter. Third, a designer must be cognizant of how different users behave in an on-line learning environment.

How Useful is the Web Site Prototype?

Usefulness is a central component in determining whether a system will be accepted (Nielsen, 1995). As stated in the review of the literature, a useful system is one that is able to (a) achieve its desired goal and (b) provide benefits to potential users.

Achieves its Desired Goal

In assessing whether the web site prototype provided information and facilitated communication, it is helpful to consider (a) its utility and (b) its usability.

Utility. Utility refers to whether or not a system can "do what is needed" (Nielsen, 1995, p. 281). In other words, did the Web site prototype achieve its purpose of providing information and facilitating communication to participants in Field Experience programs? Overall, participants indicated that the Web site prototype was a useful means of supporting Field Experience programs. However, when participants assessed the site in terms of their experiences, some individuals found it to be more useful than others. Those participants who reported few difficulties were generally satisfied with the site. However, those participants who encountered difficulties accessing particular areas of the site indicated ways of enhancing its utility. These recommendations will be discussed in the final section of this chapter.

Usability. Usability refers to how well individuals can use a system (Nielsen, 1995, p. 281). Web users prefer sites with a minimalist design--in other words, sites that are easy to use, easy to control and virtually error-free. The Web site in this study was found to meet these criteria.

In terms of ease of use, the lack of graphics and consistent use of hyperlinks

allowed participants to move "seamlessly" within and between pages. Participants reported feeling comfortable using the site, liked the convenience of particular features (i.e., clicking on hyperlinks instead of scrolling down a page) and preferred the on-line format of the IPT handbook to the paper version.

In terms of control, Web designers must provide users with the means to direct their own on-line experiences (Nielsen,1994). However, users still need clearly marked "emergency exits" in case they mistakenly venture into an unwanted area. Although Web browsers automatically supply several emergency exits (i.e., the back button, the stop button, the history button, etc.), designers should integrate additional features into their sites (Instone, 1997). In this study, participants noted that the link to the home page enabled them to easily exit out of an area. This feature was especially helpful in providing beginner level users with additional support.

Alternatively, the most usable design is one which prevents problems from occurring (Nielsen, 1994). Although errors are inevitable (Instone, 1997), it is important that users are able to assess why problems occur and what can be done to correct them. As suggested by Gray (1997), information sheets that include instructions or contact information (i.e., telephone numbers, fax numbers, e-mail addresses) can prevent users from encountering unnecessary difficulties and aid in repairing minor glitches. Although participants in the study indicated that login instructions were easy to follow, some individuals reported problems accessing the site and downloading files. Consequently, using the Web site was a frustrating experience for participants who did not understand error messages. Clear and consistent error messages enhance the usability of a site and contribute to its usefulness. Therefore, error messages should be expressed in plain language to precisely indicate problems and constructively suggest solutions (Nielsen, 1994). However, even better than clear and consistent error messages is a careful design which prevents difficulties from occurring.

Provides Benefits to Potential Users

Consistent with the literature, the Web site prototype was found to be convenient, as well as cost and time effective.

Convenient. The Web is becoming the medium of choice for (a) teachers to access and share educational resources (Gray, 1997), (b) University and College professors to deliver on-line instruction (Khan, 1997; Hall, 1999) and (c) University administrators to support students from a distance (Hanna, 1998). In the case of this study, the Web was found to be useful in (d) communicating information to school personnel. One cooperating teacher liked the convenience of bookmarking the Web site for future use. This would enable her to quickly access information at a later time. Another teacher liked having electronic access to a handbook. This provided her with an up-to-date, on-line source of information. Moreover, accessing the electronic version of the handbook was more convenient than looking for the paper version that was "often misplaced." Some participants found the calendar feature particularly useful. It provided clear and definite deadlines for teachers to complete student teacher evaluations. Furthermore, individuals agreed that the downloadable files (i.e., templates and forms) contributed not only to the convenience of the site but to its overall appeal.

Cost effective. In a synopsis of the Collaborative Schools Initiative, Armstrong et al. (1999) describe ways of communicating in an environment in which Faculty resources are "stretched very thinly" (p. 14). As a result, Division of Field Experience personnel are constantly seeking ways of maintaining successful Field Experience programs in a cost-effective manner. Consistent with findings from Khan (1997), participants revealed that the Web site serves as a cost-effective means for communicating information. Participants indicated two ways in which a Web site can reduce costs for the Division of Field Experiences. First, there would be a reduction in the amount of money required for paper if fewer Field Experience handbooks are printed. Second, if student teachers and cooperating teachers are able to download templates and forms from a Web site, fewer computer disks need to be distributed to school personnel. As reflected in a comment by one Field Experience officer, a Web site can provide a mechanism for "one-stop shopping" for all Field Experience-related documents (personal communication, R. Wimmer, November 28, 1998).

Time effective. As explained by Rajani and Rosenburg (1999), Web users are task-oriented and use Web sites as a means of saving time and quickly retrieving information. In

my study, the Web site prototype was found to lend itself to the busy schedules of school and University personnel. Participants commented on the site's asynchronous nature in facilitating communication with Division of Field Experience personnel. One cooperating teacher felt that using the Web site might reduce the amount of time that individuals can spend trying to contact University personnel. As a result, computer-mediated communication enables individuals to spend more time on teaching and learning (Gray, 1997).

Summary

In conclusion, the usefulness of the Web site prototype was determined by the degree to which individuals were able to successfully access its various components and utilize its features. As a result of providing information and facilitating communication to participants in Field Experience programs, the Web site was deemed useful.

What Recommendations do Participants Provide in Relation to the Web Site Prototype?

This section contains participants' recommendations in relation to the literature on Web site development and computer-mediated communication. These recommendations regard additions to the Web site and are divided into two categories: (a) static additions and (b) interactive additions. Recommendations regarding Web site maintenance will also be discussed.

Static Additions

Participants suggested the inclusion of three static additions to the site: (a) instructions for downloading files, (b) additional links and (c) a glossary of terms.

Instructions for downloading files. As previously noted, participants encountered problems downloading files from the Web site. Some participants recommended that written instructions be provided on how to download files. This information should be brief, include page screenshots and list concrete steps to be carried out (Nielsen, 2000a). Moreover, if users repeatedly encounter a problem, a "frequently asked questions" (FAQ) page with accompanying answers can also be useful (Crumlish, 1998).

Additional links. The links that participants recommended for addition to the site can be organized into two categories: (a) contextual links and (b) external links.

From the home page, users can visit different areas of the Web site by clicking on

an icon (graphical link), or by clicking on a corresponding title (textual link). One cooperating teacher suggested that each icon and title be accompanied by a brief description. She felt that contextual information would be helpful in providing users with clear directions about the content of the Web site. Users often require a considerable amount of time to become familiar with the content and features of a Web site (Nielsen, 2000a). However, when designers use consistent navigational structures and effectively position contextual links, users can predict where to find relevant items and readily access the information they require (Spool, 1998).

Recommendations for external links correspond to the guidelines set forth by the University of Alberta's World Wide Web Task Force (1996). Web administrators need to follow these guidelines to ensure that all official Web pages are consistent in design and that the University is appropriately identified. One participant--a staff member from the Division of Field Experiences--suggested the inclusion of a link from the CSI home page to the University of Alberta home page. He also recommended that each of the Web pages within the IPT Secondary handbook contain a link to the department of Secondary Education. University guidelines indicate specifications for these types of links (WWW Task Force, sections 4.1, 4.7, 5.2). Another participant--a school coordinator--suggested that links be made to local colleges affiliated with the University of Alberta (i.e., Concordia College, King's College, Grant MacEwan College, Faculté St. Jean). However, to create and maintain effective visual appearance, it is important that the placement and size of graphical links complement the home page. In other words, these icons should play a secondary role to the intended content of the Web site.

Several participants recommended links to other sites and Web pages. While some of these links relate specifically to Field Experiences (i.e., EDPS 310, CSI newsletter), others relate to current educational topics of interest (i.e., student assessment, multiple intelligences). Technology-related links to on-line magazines (i.e.,T.H.E. Journal, The Technology Source, EdWeek on the Web, etc.) can also help educators integrate technology into teaching and learning. As stated by Lapp et al. (1998), links to sources for teaching plans and ideas can help teachers create interactive programs that offer curricular connections and extensions.

Glossary of terms. One staff member from the Division of Field Experiences suggested the addition of a glossary to clarify the meaning of various commonly used terms. He felt that a glossary would be particularly helpful for people new to Field Experience programs. University-school programs such as the Collaborative Schools Initiative can involve thousands of individuals who are from a number of different institutions. In order to unite these individuals, it is important to establish a common language (Powers et al., 1988; Carson, Sumara, Malecki & Chyzowski, 1994).

From a technical standpoint, it is possible to create an on-line glossary. As explained by Goldberg (1997), WebCT courseware contains an indexing feature that allows for the automatic creation of an index of site content and terms.

Interactive Additions

On many Web sites, users are able to interact with content by linking within and between pages. However, McVay (1998) argues that an effective Web site also contains a mechanism for enabling interaction between people. In such interactions, individuals are able to share beliefs and ideas. Participants in this study recommended adding two mechanisms for enabling interaction between people: (a) a questions or comments section and (b) a conferencing section.

Questions or comments section. Some participants felt that the ability to contact an individual regarding questions or concerns would enhance the usability of the Web site. One cooperating teacher felt that the addition of an interactive question and answer section would enable users to communicate more effectively. Web administrators require a variety of ways for soliciting feedback from users (Lynch and Horton, 1997). One way of facilitating this process is to provide an e-mail link to a Web site administrator at the bottom of each page (WWW Task Force, Policy 4.7.2). As suggested by Mary, a cooperating teacher at Acorn School, one individual may not be sufficient to manage the potentially large number of requests that users might generate. Accordingly, an e-mail link can be provided to to other individuals responsible for the Web site (Policy, 4.3). These alternate channels of communication are psychologically and socially important for users (Gay and Lentini, 1995; Hermann, 1998).

Conferencing section. Many participants viewed the addition of conferencing tools such as bulletin boards and chat rooms as effective mechanisms for communicating with other Field Experience participants. One cooperating teacher suggested that a conferencing section would be particularly beneficial for those individuals who require a non-threatening means of communication. According to Connie, a cooperating teacher at Blackdale School, a conferencing tool would be advantageous for student teachers and cooperating teachers because it would provide an informal mechanism for obtaining a second opinion about particular experiences without "feeling . . . judged." From a technical standpoint, WebCT courseware has three features which enable users to communicate: a private e-mail feature, a chat feature and a conferencing feature (Goldberg, 1997). The private e-mail feature allows users to contact an instructor, designer or other users of the Web site. The chat feature allows for users to engage in real-time conversations whereas the conferencing tool allows users to participate in on-line forums. Lapp, Flood and Martin (1998) explain that an increasing number of teachers are using chat rooms to gather and discuss questions or ideas. McVay (1998) found that having "electronic office hours" facilitates communication and suggests that instructors post times of availability (i.e., Wednesday at 8:00 pm). Through the availability of e-mail, chat rooms and conferencing features, educators are changing the way they communicate with colleagues and students.

Based on the findings in this study, Field Experience participants reported having little to no experience using conferencing tools. One participant described her experience using an electronic board to post messages to other students outside the confines of the classroom. She indicated that this feature was useful because it allowed messages to be sent or retrieved at any time.She was less optimistic about her experiences with chat rooms and explained that the requirement to log in to the chat room at the same time as another individual was challenging. Each time she was in the chat room it was not being used by anyone else. Experiences such as this suggest that a "human infrastructure" must be available to guide, motivate and support users of Web-based systems.

Web Site Maintenance

Participants indicated that maintaining the Web site would require support from University personnel. Such individuals include: (a) on-line moderators and (b) Web site

administrators.

On-line moderators. As one cooperating teacher suggested, on-line moderators can facilitate virtual discussion groups for cooperating teachers and for student teachers. McVay (1998) notes that such an individual motivates and facilitates discussions. Possible topics for discussion might include teaching resources, curricular issues, time management and parental relations (Eisenmann & Thornton, 1999). Moderators also have other responsibilities (Anderson and Kanuka, 1998). For example, a moderator can delete or alter any message that contains irrelevant or offensive material. In the case of the CSI Web site, moderators would need to be aware of campus-related policies as they relate to computer use and student behaviour. Moreover, moderators must be aware of professional codes of conduct.

Web site administrators. In order to provide information and facilitate communication to participants in Field Experience programs, a contact person such as Web site administrator would be a valuable addition to the site. Nielsen (1997b) suggests that this should not be the sole responsibility of one individual. There are a number of individuals required. While Web designers are responsible for creating an original site and adding any new features, Web technicians are responsible for maintaining the content of a site. Web managers, or administrators, are responsible for maintaining communication with users and ensuring that content and style are accurate and consistent. Web site management is an issue that has a variety of implications for the Division of Field Experiences. These implications will be highlighted in the next chapter.

Chapter VI: Conclusions, Recommendations, and Personal Reflections

This chapter consists of four sections. The first section addresses the research questions through a synthesis of the findings and the literature.The second section contains conclusions which are explicitly linked to the research findings. To operationalize the findings, the third section highlights proposed recommendations for each conclusion. The chapter concludes with final reflections about the study.

Research Questions

With an estimated 7,000 people involved in Field Experience programs at the University of Alberta, there is a need for a common medium of communication. Based on this presumption, the questions used to guide this research were focused on how a Web site can provide information and facilitate communication to participants in Field Experience Programs.

One fundamental research problem guided this study: Can a Web site facilitate communication and provide information to participants in Field Experience programs? To examine the issues that accompany this problem, my research focused on the following five questions: (a) Can a Web site provide timely information to participants in Field Experience programs? (b) Can a Web site consistently communicate information to participants in Field Experience programs? (c) What considerations are necessary in order to effectively use a Web site? (d) How useful is the Web site prototype? (e) What recommendations do participants provide in relation to the Web site prototype?

In this chapter, the five research questions will be addressed sequentially. Then, the fundamental research problem will be answered in relation to the findings.

Can a Web Site Provide Timely Information to Participants in Field Experience Programs?

Although participants reported that existing channels of communication between schools and the University are adequate, the immediate nature of a Web site was seen as advantageous. First, the Web site can serve as a tool to provide additional support to University liaisons. School coordinators and University facilitators play a instrumental role in facilitating regular communication and providing information to participants in Field Experience programs. As a result, participants indicated that the Web site would not be

effective as the principal tool for communication. Regular visits from a University representative are essential to maintaining effective communication. Second, school personnel and student teachers reported having little knowledge of the Collaborative Schools Initiative. Therefore, the Web site provided them with an additional source of information to learn more about these kinds of Field Experience-based programs.

There were a variety of factors that contributed to the Web site's ability to provide timely information. School and University representatives demonstrated favourable attitudes towards technology. Computer accessibility was sufficient. Moreover, participants were committed to using the Web site and mechanisms were in place to support them. In these ways, the Web site supported the work that was occurring at the classroom and University level, and provided timely information to participants in Field Experience programs.

Can a Web Site Consistently Communicate Information to Participants in Field Experience Programs?

Several factors influenced whether or not the Web site was able to consistently communicate information to participants in Field Experience programs. Web content needs to be consistent with information provided through Field Experience liaisons, and through resources such as handbooks or other sites within the Faculty of Education. Moreover, in order for participants to be aware of any modifications to the site, content needs to be regularly updated. In the case of this study, participants periodically checked the Web site for revised information. The on-line calendar served as a useful tool for reminding cooperating teachers and student teachers of important deadlines. E-mail was also an effective means of informing participants of any changes to the Web site.

The type of task also influenced whether or not the Web site was effective in consistently communicating information to participants. Although the site was not designed to be used to discuss precarious situations (i.e., student teacher evaluations, personality conflicts, etc.), it was particularly effective in providing information about routine situations and concerns.

What Considerations are Necessary in Order to Effectively Use a Web Site?

There are many factors that need to be considered when developing a Web site. Of primary importance is the potential user. It is important to assess the varying abilities and technological backgrounds of users, as well as how the Web site can best address users' needs.

A prototype can be developed, tested and refined in a variety of Web-based environments. Users prefer sites that have a minimalist design and are easy to navigate. To reduce download time, graphics and text should be minimal. The content should be succinct and organized so that users can scan and retrieve information quickly. Navigational features within the site must be consistent and organized. Feedback should provide users with a clear explanation of why problems occur.

How Useful is the Web Site Prototype?

Overall, participants felt that the Web site prototype was useful in that it served both an informational and an educational role. The usefulness of the site was determined by the degree to which individuals were able to successfully access its various components and utilize its features. As a result, three areas of the site were found to be particularly useful: (a) the overview of the CSI and Field Experience programs, (b) the on-line version of the IPT handbook and (c) the homepage. The Web site was also found to be time effective, cost effective and convenient.

What Recommendations do Participants Provide in Relation to the Web site Prototype?

The school coordinator and Field Experience staff members provided the majority of recommendations for the Web site. Since most cooperating teachers and student teachers had limited involvement in Field Experience programs, they felt less qualified to offer suggestions for the site. As noted in chapter four, participants recommended a variety of static and interactive additions to enhance the usability of the Web site prototype. The recommendations for static additions indicated ways of making the Web site easier to use. These additions included (a) instructions for downloading files, (b) additional links and (c) a glossary of terms. Also, many participants acknowledged a desire to communicate with colleagues by way of conferencing tools. As a result, they suggested that a contact person be available for maintaining the Web site and facilitating discussions between participants.

However, based on a review of the literature, it is more probable that several individuals would be required to maintain and manage the site. These individuals might include (a) a Web site administrator, (b) a Web site designer and (c) a Web site technician.

Can a Web site Facilitate Communication and Provide Information to Participants in Field Experience Programs?

Overall, participants reported that the Web site achieved its intended purpose of facilitating communication and providing information to its users. As a facilitator of communication, the Web site was an effective mechanism for: (a) supporting the work of Field Experience liaisons and (b) contacting Field Experience personnel. As a provider of information, the Web site was a convenient mechanism for: (a) quickly accessing information about Field Experience programs, (b) clarifying the roles and expectations of Field Experience participants, (c) locating information in a non-threatening environment, (d) locating additional resources and (e) accessing templates and forms and (f) providing participants with important reminders. Study participants felt that the Web site should not be used as a stand-alone tool. Instead, they indicated that it should be used as an alternate means of communication between participants in Field Experience programs. The Web site prototype can be described as a one-way medium of communication. However, given participants' recommendations for increased interaction between users, the Web site has the potential of becoming more of a "multi-medium" of communication (Morris and Ogan, 1996).

Conclusions

Since new projects and technological tools must be introduced carefully (Neilson, 1997), the diffusion process of an innovation is one that occurs over time (Rogers, 1995). Although a synthesis of the research indicates that a Web site can provide information and facilitate communication to participants in Field Experience programs, it is difficult to ascertain its "shelf life" over time. However, in response to the process thus far, the findings do identify some interesting issues. In this section, three main issues are identified. Later, recommendations are provided to indicate possible directions for the use of Web-based communication in Field Experience programs in the future.

First, inconsistencies exist among individuals with respect to their knowledge of

Field Experience programs, and their background in terms of educational training and expertise. While some individuals have had a considerable amount of involvement with Field Experiences, others have had little exposure to the types of programs offered, or to the roles and responsibilities of various participants. Similarly, in terms of computer training and expertise, while some individuals possess advanced technological knowledge and skills, others are novice users. These issues have implications in relation to Web site usability and will be discussed in the following sections.

A second issue involves balancing decreasing resources with increasing needs for technology. As a result, educators need support to effectively deal with the multitude of changes occurring at the University and school level. Since the need for technology-related skills is growing (Tapscott, 1998), the skills required to effectively use computers is increasing as well (Carroll, 1998). As suggested in the findings, pre-service teachers must also be able to integrate technology into their existing repertoire of skills.

Third, an analysis of the findings regarding Field Experience programs indicates that there is a need for clear and consistent information. However, without a variety of communication tools to meet the needs of a growing number of participants in Field Experience programs, it will be difficult to establish and maintain any degree of consistency in terms of acceptable practices and expectations. As a result, the ability of a Web site to provide clear and consistent communication will depend on whether the majority of users perceive it to offer a relative advantage to others methods of communication. According to Rogers (1995), if the Web site is not overly complex, can be tried on a limited basis and has observable results, it will undergo an increased rate of diffusion. How well it is then accepted and utilized by teachers, students and Field Experience personnel will remain to be determined. In any case, clear and consistent information and a language that is easily interpreted by all members of the learning community are critical (Tams, 1991; Carson et al., 1994; Friesen, 1994).

Recommendations

Associated with each conclusion is a recommendation. In total, there are three recommendations which enact the conclusions. These recommendations relate to theory, to practice or to both.

It is a common misconception that if Web designers build a site, then individuals will automatically use it (Neilson, 1997). This is necessarily not true. Therefore, in terms of the Web site prototype, short and long term monitoring of its effects on communication within Field Experience programs is essential. As a result, University personnel must be committed to the design and maintenance of the Web site and to the provision of technical support for users. Moreover, as issues develop, adjustments must be made to support users' needs (Fulop et al., 1997). Due to discrepancies between theory and practice, information about the usability of the Web site should be compiled, discussed and reviewed on an ongoing basis. Systematic research and analysis will advance the Web site prototype to the next phase of its development. As a result, the potential for enhancing communication between participants in Field Experience programs will be increased.

Inconsistencies in terms of training and expertise can be supported through the use of mentorship programs. Mentorship programs are particularly meaningful when they are informal, provide hands-on experience and enable users to work together (Gray, 1997). Practical resources that contain explicit instructions can provide particularly constructive learning mechanisms. Such proactive support mechanisms enable users to learn new technologies in a non-threatening environment in ways that foster equitable opportunities for professional growth. Moreover, the implications of this recommendation also highlight a need for ongoing review of the requirements for teacher formation programs in terms of technology integration.

As previously suggested, integrating new technologies into a preestablished system requires a balanced, systemic approach to the allocation of resources, time and attention to all phases of the change process (Fullan, 1982; Buchanan, 1998). This calls for leadership, flexibility, and attention to the individual needs of each component of the organization. As users experiment with Web-based communication, there is a need for instructional support that lends to the completion of a variety of tasks (Lawton, 1997; Foa, Johnson & Schwab, 1997). In terms of Web site usability, these tasks may range from basic items such as using Web browsers, to more complex items such as downloading files or applications. Accordingly, professional development opportunities that help all levels of users better understand how to utilize a Web site are advantageous (Northover, 1997). However, to

meet the needs of a growing number of Field Experience participants, an infrastructure which is designed to foster open communication must be reinforced beyond the existence of communication tools. In terms of supporting Web users, Universities will require full-time Faculty and staff dedicated to engaging individuals in this digital environment (Hanna, 1998). In order to provide users with "just-in-time" support (Wiesner, 1998), assistance should be flexible and unrestricted. Although just-in-time support can be provided electronically (Khan, 1997), human interaction is also important (Gay & Lentini, 1995; Northover, 1997). As stated by Sykes (1997), a single event will not make an impact. Continuity and ongoing support are required.

The various groups of participants in Field Experience programs--student teachers, cooperating teachers, school coordinators, University facilitators and other staff from the Division of Field Experiences--require a clear understanding of standards for pre-service teaching programs at the University of Alberta. Although leadership staff can play a vital role in enhancing teaching and learning, efficient and effective leadership requires team work, and clear and definite channels of communication. A Web site might help in this endeavour. Translated to recommendations for personnel in the Division of Field Experiences, the findings indicate that this will only occur through thoughtful planning, systematic development and careful implementation of Web-based communication.

Personal Reflections

With the advent of computer-mediated communication and Web based learning, it is evident that technology is changing the way teaching and learning occur. In accordance with government requirements such as the Information and Communication Technology Program of Studies (Alberta Education, 1998a), and the Teaching Quality Standard (Alberta Education, 1998b), the technology-related skills of educators and students are increasing. For those with computer access and support, the potential for communication is extensive.

An analysis of the findings in the literature and in this study suggests that a Web site can enhance communication between individuals when sufficient support is available. Unquestionably, Web-based communication has had an impact on practices in schools and at the University. Although the literature reveals that the diffusion process of an innovation

requires several years before its impact can be assessed (Rogers, 1995), changes in teaching and learning are already evident. To review these changes would be to reiterate what has previously been discussed. Suffice it to say that if users are provided with the support and resources they require, the overall benefits for Web-based communication far outweigh a Web site's potential to negatively influence Field Experience programs in the future.

Technology has resulted in significant changes in how individuals communicate. Supporters agree that the effects of computer-mediated communication have been substantial, leading to a new emphasis on technology integration, a more serious approach to virtual-reality experiences, and increased opportunities for sharing information electronically. As a result, Web-based communication provides an opportunity for personnel in schools and at the University to initiate stronger relationships, most notably among participants in Field Experience programs. Consequently, the focus on technology integration has a great deal of potential for enhancing communication within and beyond schools. In terms of enhancing communication to participants in Field Experience programs, the ability of individuals to communicate effectively and work collaboratively will determine whether new programs such as the CSI, or new technologies such as Web-based communication, are successfully implemented.

There are significant changes occurring in education. However, whether these changes are founded in pedagogy or in technological innovations, they must be based on sound principles, ethical research, and the needs of individuals. Prior to this study, little research had been completed in the area of Web-based communication in Field Experience programs. It is hoped that this thesis may provide pertinent information to those interested in educational change—most particularly to those interested in the ability of Web-based communication to provide information and enhance communication to individuals in different educational organizations.

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Appendix A

Field Experience Terminology

Advanced Professional Term (APT):	The third stage of the Field Experience program. Student teachers are assigned to a school for a period of nine weeks. Upon completion of this phase, student teachers are eligible for interim certification.
Cooperating teacher:	A certified teacher who works with a student teacher during his or her field experience. This person demonstrates teaching techniques, structures teaching tasks, provides feedback and prepares formative and summative evaluations.
Descriptors	Phrases or words that are commonly used in performance evaluations.
Field Experience:	Those stages of the teacher education program that involve student placements in schools. These stages differ in duration and levels of teaching practice.
Introduction to Field Experiences (EDFX 200):	The first stage of the Field Experience program. Student teachers are assigned to one school for a period of five half days, and then to another school for five half days. Students usually observe in a variety of different classroom settings during this phase, and familiarize themselves with different teaching methods and classroom management strategies.
Introductory Professional Term (IPT):	The second stage of the Field Experience program. Student teachers are assigned to a school for a period of four weeks. Prior to these four weeks full-time in a school, they attend three half days to familiarize themselves with the school, teaching environment, staff, and students.
School coordinator:	The person at the school responsible for welcoming the student teachers to the school and linking them with one or more cooperating teachers. This person supports the cooperating teacher and may help with the student teacher evaluation. This person can be an administrator or a teacher.
University facilitator:	Usually a Faculty member, graduate student in Education, prior teacher or principal who visits student teachers during their field experience, provides support for cooperating teachers and student teachers, and acts as a liaison between the school and the university.

Appendix B

Web Site Usage and Development Terminology

Browser:	A software application that allows a user to use the World Wide Web.
Conferencing:	An area in an online service in which people can collaborate on a project, or meet to discuss a topic of common interest.
Downloading:	To transfer a file from a remote site to one's own computer.
Homepage:	The primary page of a Web site, the front door, or the hub.
HTML:	Short for Hypertext Markup Language. This is the basic language used to create a Web page or Web site.
Hyperlink:	A word, symbol, image, or other element in a hypertext document that links to another such element in the same document or in another hypertext document. The hyperlink is activated with a mouse click.
Hypertext:	A special type of database system, in which objects, text, pictures, and programs, can be linked to each other.
Icon:	A small pictorial symbol used on computer menus, windows, and screens to represent a certain function of the computer system.
Interactive content:	Information that is exchanged between people on a Web site, via synchronous or asynchronous communication.
Internet:	A worldwide, public network of computers that serve as mediums for communicating and obtaining reference material on a particular topic. Access is available to anyone with telecommunications equipment and appropriate hardware and software.
Local area network: (LAN)	Two or more computers and / or peripheral devices connected together.
Login:	The process required in order for a computer system or network to recognize the user. The user needs to enter a username and password before the computer will let the user into the system.

Modem:	Acronym for modulator-demodulator. A device or program that converts digital to or from analog signals, thus enabling a computer to transmit data over telephone or cable lines.
On-line:	When a computer is connected to a network of other computers, such as the Internet.
Password:	The secret code that is used in conjunction with a username, that allows a user to log in to another computer.
Prompt:	A symbol or message displayed on a computer monitor or an audio signal informing a computer user that some input is required.
Prototype:	A trial model or preliminary version of a product.
Server:	A network computer that handles jobs such as sorting and routing mail, maintaining archive sites, and serving Web pages to multiple clients.
Static content:	Information that rarely needs to be refreshed or updated on a Web site.
Uploading:	To transfer data from a computer to a network.
URL:	Abbreviation of Uniform Resource Locator, the global address of documents and other resources on the World Wide Web.
Username:	The name that allows a user to log in to another computer.
Web page:	A page on a Web site.
Web site:	A location on the Internet, that is accessible by a specific or general population. It contains a number of Web pages that contain information about a particular topic or organization.
World Wide Web (WWW):	A database made up of linked hypertext documents. It allows users to jump from screen to screen to view pages with graphics, text, and multimedia features.

Modified and adapted from the following sources:

a. http://webopedia.internet.com
b. http://www.techweb.com/encyclopedia
c. http://dictionary.msn.com

Appendix C

Components for Web-based Communication (Khan, 1997)

I.	Multimedia Component	1. Text and graphics 2. Audio Streaming (e.g., Real Audio) 3. Video Streaming (e.g., QuickTime) 4. Graphical User Interface (GUI)—uses icons, graphics, windows and a pointing device, instead of a purely character-mode (Microsoft Windows and MacOS are examples of GUIs) 5. Compression technology (e.g., ShockWave)
II.	Internet Tools - Communications Tools	1. Asynchronous: e-mail, listservs, newsgroups, etc. 2. Synchronous: text-based (e.g., Chat, IRC, MUDs, etc.) and audiovideo (e.g., Internet Phone, Cu-SeeMe, etc.) conferencing tools.
III.	Internet Tools - Remote Access Tools (Logging in to and transferring files from remote computers.)	1. Telnet 2. File Transfer Protocol (ftp)
IV.	Internet Tools - Internet Navigation Tools (Access to databases and Web documents.)	1. Gopher 2. Lynx
V.	Search and Other Tools	1. Search Engines 2. Counter Tool
VI.	Internet Tools - Computers and Storage Devices	1. Computer platforms running Unix, DOS, Windows and Macintosh operating systems. 2. Servers, hard drives, 3. CD ROMs, etc.
VII.	Connections and Service Providers	1. Modems 2. Dial-in or dedicated phone or cable lines Internet Service Providers
VIII.	Authoring Programs	1. Programming languages (e.g., HTML — HyperText Markup Language, VRML — Virtual Reality Modeling Language, Java, Java scripting)

Appendix D

Introductory Letter

Randy Lyseng
University Facilitator / Researcher,
Department of Educational Policy Studies
7-167K Education North
University of Alberta
Edmonton, AB
T6G 2G5

Name,
Position,
Name of school
Address of school
City, Province
Postal Code

Date

Dear Name,

My name is Randy Lyseng, and currently I am a graduate student at the University of Alberta. This year I am working on the research component of my program in Leadership and Technology. Through my recent experiences as a cooperating teacher, school coordinator and university facilitator, I have witnessed the problem of miscommunication between participants involved in Field Experience Programs. For this reason, I have developed a web site in hopes of enhancing communication between the University and schools. However, in order to effectively design a web site for a target audience, I will need to work with a select group of Field Experience participants (student teachers, cooperating teachers, and school coordinators). Based on the feedback and data I collect from the respondents in my study, I will be able to modify the prototype of the web site I have created.

What's involved?

I have arranged the study to coincide with the time that I am facilitating at your school. The period of the study is four weeks. The following describes how the participants will be involved:

- completing a survey (10 minutes) to determine your familiarity with technology and determining a needs assessment for the web site.
- using the web site, between March 1 and March 12th, 1999 to obtain information about Field Experiences (this may be done at home or at school).
- completing a second survey (10 - 15 minutes) towards the end of the Field Experience which involves providing an evaluation of the web site.
- potentially participating in one focus interview at the end of the study (1 hour).
- attending optional training sessions for those participants who require additional assistance.

Risks

- No risks have been identified as a result of participating in this study.

Benefits

- participants may learn something new
- communication between the University and the school may be further enhanced.
- communication between student teachers, cooperating teachers, and facilitators, may be further enhanced.
- participants become more informed of the Collaborative Schools Initiative and Field Experience Programs.
- teachers (and student teachers) may be able to include their participation in their annual professional growth plan
- the objectives of the study correspond to the district priority: "to promote high quality teaching"
- participants are involved in the input process of an innovation

Ethical Considerations

Due to the nature of the study, anonymity (the researcher not knowing who you are) will not be possible. Similarly, in the case of the group interview process, confidentiality to the individual participants in the study will not be possible. However individual participants will be provided with secure access to the web site, and can submit their survey responses directly to the researcher.

Field notes, surveys and audio-tapes will be placed in a secure area. Names of schools, school coordinators, cooperating teachers and student teachers will not be connected to information and / or patterns that may arise. Participants will be given full disclosure; pseudonyms will be used in all writing to preserve the identity of each participant. Oppressive or discriminatory language will not be used. Participants may choose not to respond to questions during the discussion. Reporting of the data will assure that no individual can be identified, and any information obtained from a respondent that might identify them (either individually, or as members of a small group) and potentially cause them harm, will not be included.

Information will be shared with participants in two ways: (a) an executive summary and copy of the thesis will be provided to the school district; (b) transcripts that will be used in the study will be mailed to the group for verification of date and information.

This letter will be followed by a personal telephone call or meeting in person to clarify any questions you may have. You may opt out at any time.

I encourage you to participate in this study. I believe there are a lot of benefits, and there is a growing expectation that educators become more adept at using computers in their classroom not only to teach, but to communicate effectively with others. Should you have any questions, please feel free to call me at home (434-6696), office (492-7625), or e-mail (rlyseng@powersurfr.com).

Sincerely,

Randy Lyseng

Appendix E

University of Alberta Research Consent Form

I, _____, hereby consent to participate in the Collaborative Schools Initiative Web Site study, as described by the researcher. I agree to:

- use a web site that the researcher has created
- complete two surveys
- be interviewed by the researcher in a group setting, if I am selected to do so
- be audio-taped by the researcher in a group setting, if I am selected to do so

I understand that:

- I may withdraw from the research at any time without penalty, for any given reason
- all information gathered will be treated confidentially and discussed only with your supervisor
- any information that identifies me will be destroyed upon completion of this research
- I will not be identified in any documents resulting from this research

I also understand that the results of this research will be used only in the following:

- the researcher's thesis
- presentations and written articles for other educators

Signature _____

School _____

Date _____

For further information concerning the completion of the form, please contact:

Randy Lyseng
University Facilitator
Department of Educational Policy Studies
Home: 434-6696
Office: 492-7625
E-mail: rlyseng@powersurfr.com

Appendix F

Collaborative Schools Initiative Web Site Access Instructions

Thank you for agreeing to participate in the study. Please access the site and complete survey II by March 12th, 1999.

Please follow these important steps.

1. Open the Internet browser you will be using (Netscape or Explorer). Netscape tends to work better with the Web site.

2. Type in the following address:
   a. **http://www.ualberta.ca/webct**
   b. go to course listings by Faculty
   c. click on Education
   d. click on Collaborative Schools Initiative on the top of the page

3 You have accessed the Welcome page. You may want to bookmark this site for future use.

4. Click on login button. You may receive a message to accept a security certificate. Accept this. It is mainly a warning that the Web site is on a secure server.

5. Type in your login ID: **Faculty**

6. Type in your password: **Trial**

7. Start surfing!

8. To exit, just quit the Browser (FILE - QUIT).

9. If you have any questions at all, please contact me.

Randy Lyseng
University Facilitator
Dept. Ed Policy Studies, U of A
Office: 492-7625
Fax: 492-2024
Home: 434-6696
rlyseng@powersurfr.com

Appendix G

Collaborative Schools Web Site Study - Survey I

Thank you for agreeing to do this survey. It should take approximately 10 minutes to complete.

A. Computer access / ownership (Please place a check mark beside the appropriate answer.)

1. Do you have access to a computer at school? __ Yes __ No (If "no", go to #4)

2. Where is the location of the closest computer you can access in the school?

__ Teacher's Desk __ Classroom (student / teacher use)
__ Computer Lab __ Staff Room
__ Other (please specify): _____

3. What type of operating system does this computer have? (Please check more than one box, if applicable.)

__ Windows __ Mac __ DOS __ Don't know
__ Other (please specify): _____

4. What type of operating system does your home computer have? (Please check more than one box, if applicable.)

__ Windows __ Mac __ DOS __ Don't know
__ Do not have access to a computer at home
__ Other (please specify): _____

B. Computer use (Please place a check mark beside the appropriate answer, unless otherwise stated.)

1. When you use a computer, where does this normally take place?
__ Home __ School __ Both __ Other (please specify) _____

2. What is your experience with a Word Processor?
__ no experience __ beginner __ intermediate __ advanced

3. What is your experience with E-mail?
__ no experience __ beginner __ intermediate __ advanced

4. What is your experience with the Internet?
__ no experience __ beginner __ intermediate __ advanced

5. What is your experience with conferencing using computer technology?
__ no experience __ beginner __ intermediate __ advanced

6. Approximately how much computer experience have you had prior to beginning this study? (please indicate the amount in months or years). _____

7. Approximately how many hours per day do you use a computer? _____

Comment: _____

C. Training (Please place a check mark beside the appropriate answer.) **Choose only ONE answer.**

1. The majority of your computing skills were acquired through
   __High School
   __University / college required courses (credit)
   __Work-related Workshops
   __University / college required courses (non-credit)
   __Other (please specify): _____

   Comment: _____

2. What would be your most preferred method of receiving for computer instruction?

   __Self-study tutorials
   __One-on-one tutorials with instructor
   __Group training sessions
   __No preference
   __Other (please specify): _____

   Comment: _____

3. At what time would you find it most preferable to upgrade your computer skills?
   __At the start of the school year
   __Any time during the school year
   __At the end of the school year
   __During non-working time (holidays, weekends,etc.)
   __No preference
   __Other (please specify): _____

   Comment: _____

D. Internet Connectivity (place a check mark beside the appropriate answer)

1. What kind of browser do you use for the Internet?
   __Netscape 3.0 __Netscape 4.0 __Netscape 4.5 __ Explorer 4.0
   __Explorer 4.5 __No idea
   __Other (please specify):_____

2. Do you have access to the Internet at school? __ Yes __ No

3. Do you have access to the Internet at home? __ Yes __ No

4. What is the speed of the modem or type of connection to the Internet at school?
   __ 14.4 K __ 28.8 K __ 33.6 K __ 56 K
   __school/office LAN __Cable Modem __ No idea __ No access

   Comment: _____

5. What is the speed of the modem or type of connection to the Internet at home?
   __ 14.4 K __ 28.8 K __ 33.6 K __ 56 K
   __school/office LAN __Cable Modem __ No idea __ No access

   Comment: _____

E. Opinions relating to technology

Rate whether you disagree or agree with the following questions. Please circle your answer. Choose from the following scale:

SD = Strongly Disagree D = Disagree N = Neutral A = Agree SA = Strongly Agree

1. Access to a computer is essential for teachers.	SD	D	N	A	SA
2. It is essential that teachers own their own personal computer.	SD	D	N	A	SA
3. Using computer technology is a frustrating experience.	SD	D	N	A	SA
4. Computer technology can enhance communication.	SD	D	N	A	SA
5. Using computer technology is a waste of time.	SD	D	N	A	SA

F. Opinions relating to Field Experiences

Rate whether you disagree or agree with the following questions. Please circle your answer. Choose from the following scale:

SD = Strongly Disagree D = Disagree N = Neutral A = Agree SA = Strongly Agree

1. There is a need to enhance communication between the University and schools.	SD	D	N	A	SA
2. There is a need to diffuse information more effectively between the University and schools.	SD	D	N	A	SA
3. There is lack of support for participants involved in the Field Experience program.	SD	D	N	A	SA
4. I have a clear understanding of the Collaborative Schools Initiative.	SD	D	N	A	SA
5. I have a clear understanding of my role in the Field Experience.	SD	D	N	A	SA

G. Personal information

1. Name: _____ 2. Date: _____

3. School: _____

4. Position: __ Student Teacher __ Cooperating Teacher __ School Coordinator
__Other (please specify): _____

5. Gender: __ Male __ Female

6. Year of birth: ____

School Staff Only

1. Number of years experience in the Field Experiences program as a cooperating teacher or school coordinator: ___

2. Number of years teaching experience: ___

3. Number of years teaching at this school: ___

Comments: _____

H. Focus Group

During the final week of the Field Experience, I will be interviewing a group of participants that have participated in this study. If you are willing to participate in the focus group and are willing to place your name in a selection pool, please indicate this desire below. Please note, there are no guarantees that you will be selected.

____ I would like to participate in the focus group. Please place my name in the selection pool.
____ I choose not to participate in the focus group at this time. Please do not place my name in the selection pool.

Thank you for completing this survey. Please return this survey directly to:

Randy Lyseng
University Facilitator / Researcher
Department of Educational Policy Studies
University of Alberta

Should you have any questions, please contact me via the numbers or e-mail address below:
Office: 492-7625
Fax: 492-2024
Home: 434-6696
E-mail: rlyseng@powersurfr.com

Appendix H

Collaborative Schools Web Site Study - Survey II

TO BE COMPLETED AND HANDED TO YOUR SCHOOL SECRETARY BY: FRIDAY, MARCH 12TH

I. Web Site Design

Please evaluate the design of the Web site according to the criteria described below. Please circle your answer. Choose from the following scale:

SD = Strongly Disagree D = Disagree N = Neutral A = Agree SA = Strongly Agree

1.	Speed - The home page downloads efficiently.	SD	D	N	A	SA
2.	First impression - general appearance					
	• You can tell where you are immediately.	SD	D	N	A	S
	• The home page is attractive, has strong eye appeal.	SD	D	N	A	SA
	• The home page makes you want to continue exploring the site.	SD	D	N	A	SA
	• I was able to log in to the site with success.	SD	D	N	A	SA
3.	Ease of navigation					
	• You can move from page to page, link to link, item to item with ease, without getting lost or confused.	SD	D	N	A	SA
	• There are sufficient links for both backward and forward movement.	SD	D	N	A	SA
	• The links are helpful and appropriate.	SD	D	N	A	SA
	• There is a sufficient number of links.	SD	D	N	A	SA
	• There are links to other helpful sites.	SD	D	N	A	SA
	• All links are clearly labelled and serve an easily identified purpose.	SD	D	N	A	SA
4.	Use of graphics					
	• The graphics make a significant contribution to the • site.	SD	D	N	A	SA
	• The graphics are clearly labelled, clearly identified.	SD	D	N	A	SA

• Each graphic serves a clear purpose.	SD	D	N	A	SA

5. Content / Information

• There is sufficient information to make the site worth visiting.	SD	D	N	A	SA
• The information is clearly labelled and organized.	SD	D	N	A	SA
• The content effectively achieves its intended purpose.	SD	D	N	A	SA
• The content of linked sites is appropriate.	SD	D	N	A	SA

6. Web Site Maintenance and Support

• A contact person was readily available and provided assistance.	SD	D	N	A	SA

Web Site Design Questions were modified and adapted from WWW CyberGuide Ratings for Web Site Design. [Online] Available: http://www.cyberbee.com/guide2.html. Designed by Karen McLachlan, Library Media Specialist at East Knox High School, Ohio

7. Other comments in terms of design or content? Please write in the blank below. Please feel free to use the other side of the page.

_____

_____

II. Usefulness

Please rank the usefulness of the different components of the web site. Please circle your answer. Choose from the following scale:

NU = not useful at all LU = limited usefulness N = neutral
SU = somewhat useful VU = very useful

1. Homepage	NU	LU	N	SU	VU
2. What is the Collaborative Schools Initiative?	NU	LU	N	SU	VU
3. Field Experiences at a glance	NU	LU	N	SU	VU
4. IPT Information handbook	NU	LU	N	SU	VU
5. Calendar	NU	LU	N	SU	VU
6. Downloadable templates and forms	NU	LU	N	SU	VU
7. Site Map	NU	LU	N	SU	VU
8. The web site overall	NU	LU	N	SU	VU

9. Do you have any comments in terms of usefulness? Please write in the blank below. Please feel free to use the other side of the page.

_____

_____

_____

_____

_____

_____

_____

III. Comments

1. Has this web sit met your expectations? Why or why not?

_____

_____

_____

_____

2. What additional support would be helpful for using this web site?

_____

_____

_____

_____

_____

Thank you for completing this survey.

Name: _____

Date: _____

School: _____

Appendix I

Focus Group Interview Schedule Used in Study

1. Current system of communication:

a. Describe how you communicated with participants in the Field Experiences Program. (Essential)
b. Were there ways in which you wanted to improve the current system of communication? (Extra) If so, how? (Probe)
c. How might the initial system of communication compare with this web site?

2. Experience using the Web Site:

a. Describe **how** and **where** you accessed the web site. (Essential)
   - Was it from home or from school? (Probe)
   - Where in school? (Probe)

b. Describe any **problems** you encountered using or accessing the web site.
   - Problems with type of browser?
   - Problems with type of computer or network?
   - Any other problems?

3. Strength and Weaknesses of the Web Site:

a. What parts of the web site did you find the most useful? (Essential)
   - Links?
   - Page?
   - Feature?

   Why were these parts so useful?

b. What parts of the web site did you find not so useful? (Essential)
   - Links?
   - Page?
   - Feature?

   Why were these parts not so useful?

4. Recommendations / Implications for the web site:

a. How might the web site be revised to further improve communication amongst participants in Field Experiences? (Essential)

   - In terms of **design**? (Extra)
     - colours? (Probe)
     - organized? (Probe)
     - icons ? (Probe)
     - background?
     - other?

- In terms of content? (Extra)
  - enough information? (Probe)
  - important information? (Probe)

- Things to add? (Probe)

- Things to eliminate? (Probe)

b. Do you see any implications for introducing this type of communications medium to participants involved Field Experience programs?

- Positive implications?
- Negative implications?

5. Training:

a. Based on your experience using this site, would participants require any training prior to using this web site?(Essential)

b. What kind of training? Please specify (group, individual, etc.)

c. If not, describe why you do not feel this way. (Probe)

6. Communication

a. Do you think that this web site will enhance communication between participants involved in Field Experiences and the University?
   - Why do you feel this way? (Probe)

b. Do you have any other suggestions for improving communication between participants and the University?

c. Is there anything else you would like to add?

Appendix J

Pre-interview Focus Group Interview Form

Name: _____ Date: _____

Strengths of Web site	Weaknesses of Web site

Appendix K

Focus Group Interview procedures form

To be done prior to putting on tape recorder

1. Please take 5 minutes to write down some strengths and weaknesses of the Web site.
2. You may use this form throughout the interview to write down notes.
3. After this point, all conversation will be transcribed. Do you have any questions?

During the interview

1. If other people have already mentioned one of your ideas that you have written down, please cross this out on your form.
2. As I value each person's opinion, and I would like to obtain data from each person, I ask that other people refrain from interjecting.
3. You will asked some questions that may appear redundant. For the purpose of the research, it is important to rephrase the question in a different way. I apologize in advance for any repetition.
4. I will occasionally be writing down notes during the interview to keep track of my thoughts.
5. You have the right to opt out of answering any questions I ask you.
6. All of you have expressed consent to participate in the focus interview. Do you have any questions before we begin?
7. I thank you in advance for your time.

Appendix L

Screenshot of the Collaborative Schools Initiative Homepage

University of Alberta

WebCT

Welcome to the Collaborative Schools Initiative homepage

What is the CSI?

Field Experiences at a glance

IPT Information Handbook

Calendar (last update Mar 2/99)

Click To Download Templates and Forms

Site map

If you have any questions or comments about this site, please contact Randy Lyzun

Appendix M

A Screenshot of the "What is the Collaborative Schools Initiative" Web page

What is the Collaborative Schools Initiative

CSI Home Page

Introduction

Secondary schools involved

Frequently Asked Questions

School coordinator info

Collaborative Chronicles

CSI - Introduction

The Collaborative Schools Initiative is a joint Field Experiences Project between the University of Alberta's Faculty of Education and the Edmonton Area Field Experiences Committee (EAFEC) of the Alberta Teachers' Association. Since its inception in 1995 with six schools, the CSI has grown to 86 schools, at both the Elementary and Secondary levels.

Many people have made this project a success. These people include:

- student teachers
- cooperating teachers
- school coordinators
- university facilitators
- Field Experience Staff
- Faculty of Education staff

For further information, please refer to the following link

ATA News - February 24, 1998 - T. D. Baker School: Collaboration in action

Appendix N

A Screenshot of a Web Page in the IPT Handbook

Information for the Introductory Professional Term

CSI Home Page

Introduction
Contact people
Roles
Whole School Experience
Code of Conduct
Use of appropriate English
Letter of Introduction
Absences
Teachers' Convention
Grades
Withdrawal, Failure & Appeal Procedures
Personal harassment
Interim Certification
Teacher Certification
Tips
Evaluation

Absences

The following links contain important information about what to do in the case of an absence. Student teachers and cooperating teachers, please make sure to read the information in the last link.

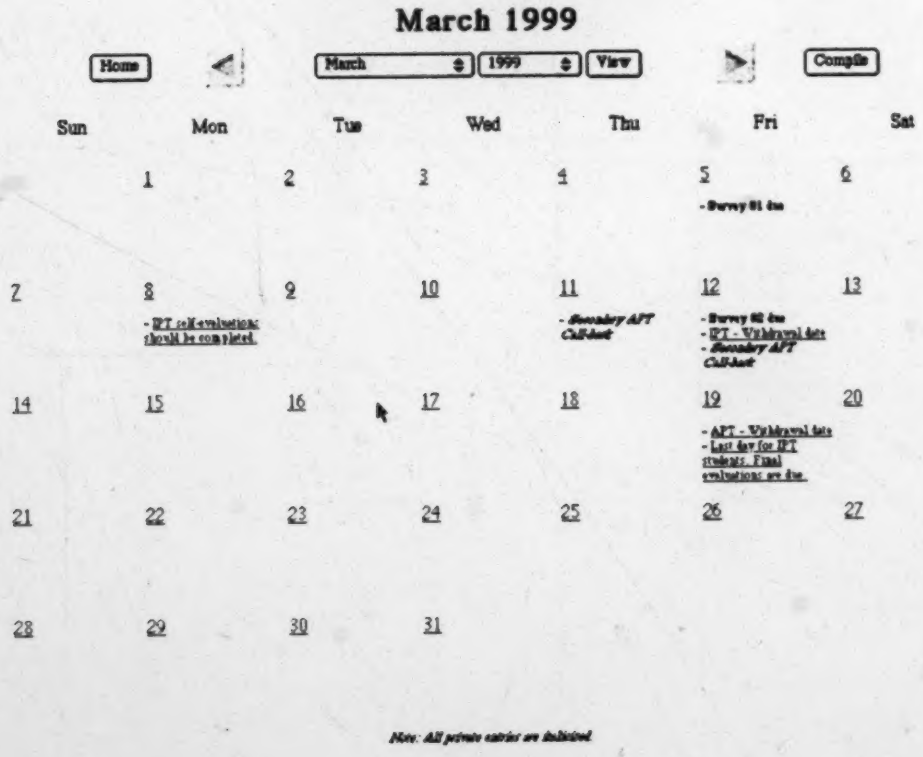
Procedures for the student teacher

Procedures for the cooperating teacher

Student teachers as substitute teachers

Appendix O

A Screenshot of the Calendar Feature



Appendix P

A Screenshot of a Portion of the Site Map

The Collaborative Schools Initiative Web site - site map

CSI Home Page

What is the CSI?

Field Experiences at a glance

IPT Handbook Information

Calendar

Templates and Forms

CSI Site Map

What is the collaborative schools initiative?

Introduction
Secondary schools involved
Frequently Asked Questions
School Coordinator Information
More frequently asked questions about the CSI!

Suggested activities
...for the EDFX 200 term

...for the IPT

...for the APT

Collaborative Chronicles

Field Experiences at a glance

EDFX 200
Introductory Professional Term (IPT)
Advanced Professional Term (APT)

IPT Handbook Information

Introduction
Contact people
Roles
Whole School Experience
Code of Conduct
Use of appropriate English
Letter of Introduction

Absences
Procedures for the student teacher
Procedures for the cooperating teacher
Student teachers as substitute teachers

Appendix Q

A Screenshot of the Downloadable Templates Web Page

Information for the Introductory Professional Term

CSI Home Page

Introduction
Contact people
Roles
Whole School Experience
Code of Conduct
Use of appropriate English
Letter of Introduction
Absences
Teachers' Convention
Grades
Withdrawal, Failure & Appeal Procedures
Personal harassment
Interim Certification
Teacher Certification
Tips
Evaluation

Evaluation - downloadable templates

Self Evaluation Form

For more information about this page, please go the evaluation page.

Download Microsoft word version 6.0 for Windows

Download Microsoft word version 5.1 for Mac

Notification of Concern Form

This form needs to be completed prior to the withdrawal date. The cooperating teacher or university facilitator must complete this form, and arrange to meet the cooperating teacher to discuss it.

Download Microsoft word version 6.0 for Windows

Download Microsoft word version 5.1 for Mac

Evaluation Templates

Cooperating teachers may download the version of their choice from this page. **Please remember that only signed paper copies are valid**. Field Experiences will not accept an e-mail copy.

Download Microsoft word version 6.0 for Windows

Download Microsoft word version 5.1 for Mac

Download Word Perfect version 6.0 for Windows

Download Claris Works 4.0 for Mac

To top of page

Back to Evaluation CSI Home Page

Appendix R

Notification of Concern Form: EDFX 350

Student's Name ID Number

School University Facilitator

Cooperating Teacher Grade/Class

NATURE OF CONCERNS:

SUGGESTIONS FOR IMPROVEMENT:(Goals, relevant dates, specific responsibilities, consequences)

Initiated by Role

Student Teacher Signature:

Student teacher receives a copy and one copy is provided to the University Facilitator.

Appendix S

Self-Evaluation Form: Introductory Professional Term - EDFX 350

This form will be completed at the end of two weeks during EDFX 350. The student teacher will complete this form, and arrange to meet with the cooperating teacher to discuss it. A copy should be provided to the University Facilitator.

Student's Name: _____

ID Number: _____ Date: _____

Consider the following categories to set personal goals and expectations:

Communication:

With Students
With Colleagues
With Staff
Oral
Written

Completion of Assignments and Classroom Responsibilities:

Classroom activities
School involvement

Personal and Professional Considerations:

Attendance and Punctuality
Initiative
Enthusiasm and involvement
Acceptance and attempts to use suggestions for others
Cooperation
Self-confidence
Self-reflection

Initial Teaching skills:

Lesson Planning
Preparation for daily teaching
Securing necessary resources
Time management skills
Providing clear instructions and expectations

Understanding Student Needs:

Relating to students
Identifying individual strengths and challenges
Active listening
Questioning skills
Observing and monitoring students

Classroom Organization and Management:

Monitoring and assisting students
Staying positive and proactive
Prevention of disruptions
Awareness of potential behavior difficulties

Current Strengths and Successes:

Goals and Future Plans:

Meeting Date

Signature of Cooperating Teacher
(Indicating this form was completed and discussed)

Note: If cooperating teachers and/or University Facilitators feel a student teacher is experiencing serious difficulty and may be at risk of failing the field experience, a **Notification of Concern** is written at this time (see following page).

Appendix T

Secondary IPT Evaluation Form

Faculty of Education
University of Alberta

Secondary Introductory Professional Term

Field Experience Final Evaluation

Student's Name:

Dates of Field Experience:

ID Number:

School:

Telephone Number:

Course: EDFX 350 (4 weeks) level(s):

Subject(s) and/or Grade

University Facilitator:

Cooperating Teacher:

Description of the school and context of teaching

For this field experience, I recommend this student teacher receive a final grade of:

Credit [ ] Fail [ ]

Evaluator signature: _____

Cooperating Teacher

For each of the categories below, indicate the level of performance and growth the student teacher has reached using only the indicators provided (S or U):

S – Satisfactory **U – Unsatisfactory**

Preparation, Planning and Organization	S [ ] U [ ]
Teaching Skills and Strategies	S [ ] U [ ]
Communication	S [ ] U [ ]
Management	S [ ] U [ ]

Classroom Climate
S [ ] U [ ]

Professional Qualities & Initiative
S [ ] U [ ]

Other Comments

Distribution:

Student Teacher's Signature

Final Evaluation Originator(s) should keep a copy as a record, give the student teacher theoriginal signed copy and return one signed copy to Undergraduate Student Services (1-107 Ed N) within five days following the completion of the field experience.

Student Teachers: This Evaluation Form is an official document. It should be retained as part of your personal academic record.

98/08/18

Appendix U

Responses Relating to Field Experience Programs, According to Field Experience Role

Table U1

Student Teachers' Responses Relating to Field Experience Programs

Statement	Attitude scale				
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
	(n = 6)				
1. There is a need to enhance communication between the University and schools.	0	0	1	4	1
2. There is a need to diffuse information more effectively between the University and schools.	0	0	1	4	1
3. There is lack of support for participants involved in the Field Experience program.	0	2	3	1	0
4. I have a clear understanding of the Collaborative Schools Initiative.	2	0	2	2	0
5. I have a clear understanding of my role in the Field Experience.	1	0	0	4	1

Table U2

School Staff Responses Relating to Field Experience Programs

Statement	Attitude scale				
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
	(n = 6)				
1. There is a need to enhance communication between the University and schools.	0	0	0	5	1
2. There is a need to diffuse information more effectively between the University and schools.	0	0	1	4	1
3. There is lack of support for participants involved in the Field Experience program.	0	3	3	0	0
4. I have a clear understanding of the Collaborative Schools Initiative.	0	2	2	2	0
5. I have a clear understanding of my role in the Field Experience.	0	0	0	5	1

Table U3

School Staff Responses Relating to Field Experience Programs

Statement	Attitude scale				
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)
	(n = 3)				
1. There is a need to enhance communication between the University and schools.	0	0	0	0	3
2. There is a need to diffuse information more effectively between the University and schools.	0	0	0	0	3
3. There is lack of support for participants involved in the Field Experience program.	0	2	0	1	0
4. I have a clear understanding of the Collaborative Schools Initiative.	0	0	0	0	3
5. I have a clear understanding of my role in the Field Experience.	0	0	0	0	3

Appendix V

Experience Level Using Different Computer Tools, According to Field Experience Role

Table V1

Experience Level Using Different Computer Tools (Student Teachers)

Productivity tool	Level of experience			
	No experience	Beginner	Intermediate	Advanced
(n = 6)				
Word processor	0	2	3	1
E-mail	0	2	3	1
Internet	0	4	1	1
Computer conferencing technology	5	0	1	0

Table V2

Experience Level Using Different Computer Tools (School Staff)

Productivity tool	Level of experience			
	No experience	Beginner	Intermediate	Advanced
(n = 6)				
Word processor	0	0	4	2
E-mail	0	0	5	1
Internet	0	1	4	1
Computer conferencing technology	3	1	2	0

Table V3

Experience Level Using Different Computer Tools (Field Experience Staff)

Productivity tool	Level of experience			
	No experience	Beginner	Intermediate	Advanced
(n = 3)				
Word processor	0	0	0	3
E-mail	0	0	2	1
Internet	0	1	1	1
Computer conferencing technology	0	1	2	0